

# Conflict Migration and Social Networks: Empirical Evidence from Sri Lanka

Giulia La Mattina\*

"Luigi Bocconi" University of Milan

*Understanding the causes and consequences of conflicts is crucial to address poverty in developing countries. This paper investigates the microeconomic consequences of civil war on the labor market in Sri Lanka. The conflict influences labor market through the functioning of social networks and I exploit the variation in migration caused by the war to estimate the impact of networks on labor market outcomes. I use conflict intensity in the province of origin as an instrument for the size of the network at the destination and I find that the migrant's probability of being employed is enhanced when his network is larger. [JEL Classification: O12, J61, Q34]*

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## 1. - Introduction

Since ethnic conflicts continuously afflict developing countries all over the world, the economic consequences of civil wars are an important matter in development economics. The consequences

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of civil conflicts for a country are devastating and sometimes irreversible. Death, destruction of human and physical capital and political instability are the most palpable and studied costs of war. High military expenses crowd out investment and GDP growth, while fighting and bombing destroy capital accumulation and infrastructure.

Economists have usually studied the effects of war from a macroeconomic point of view but much less is known about the impact of civil conflicts at the microeconomic level. However, it is essential to investigate microeconomic effects of war in order to design effective policies of reconstruction. This paper examines the microeconomic effects of a long-lasting conflict – the civil war between Tamil rebels and the Sinhalese government – on the labor market in Sri Lanka. This paper will focus on how the conflict affected the mobility of individuals within their country, and on how this, in turn, affected labor market outcomes of the immigrants through the functioning of social networks. Social networks are believed to have a special role in overcoming information problems in the labor market, but their effect on the labor market outcome is difficult to assess because endogeneity arises from the correlation between the network and unobserved variables.

In this paper I will try to estimate the effects of social networks on the probability of immigrants finding a job at their destination. To solve the endogeneity problem I exploit the exogenous variation created by the conflict in migration and thus in the network's dimension to estimate the impact of the network on the labor market. I find that the network improves labor market outcomes among its members. I also find that the size of the conflict in the province of birth of the immigrant is significantly correlated with the size of his/her network, and that the sign of this correlation is negative.

My work is organized as follows: in section two I shortly review literature on conflicts and social networks. In Section three I describe the data. In Section four I explain my identification strategy and in section five I discuss the empirical results. In section six I draw conclusions.

## **2. - Literature Review**

My work is closely related to two different strands of literature: the branch of development economics that investigates the consequences of civil conflicts and the branch of labor economics that analyses the impact of social networks on the labor markets.

Many studies have recently assessed the microeconomic consequences of civil wars. Their results show that the net effects of conflict are indeed ambiguous. Abadie and Gardeazabal (2003) studied the relationship between economic behavior of firms in the Basque region and the ongoing conflict between the Spanish government and the armed Basque nationalist and separatist organization Euskadi Ta Askatasuna (ETA). They found that war had a negative impact on firms' performance. In contrast, La Ferrara and Guidolin (2007) analyzed the returns of the diamond industry during the civil war in Angola and showed that some industries thrive on war.

Miguel analysed the consequences of conflicts on political participation in Sierra Leone. His work shows that in Sierra Leone local violence was associated with greater local mobilization and collective action post war, suggesting that the conflict produced a heightened political awareness. A similar result was found by Blattman (2008). He found that the young individuals who had been recruited as combatants or had been victims of violence during the war in Uganda developed higher political participation after the conflict. Blattman (2006) investigated the consequences of child soldiering on education outcomes of children and showed how the war hindered long run school performances. My work contributes to the branch of research that studies the micro-economic consequences of conflicts by analyzing the microeconomic effects of civil conflicts on the labor market.

Economists have studied network effects while investigating the role of non market institutions as devices that are able to provide solutions to information, enforcement and coordination problems. Fafchamps (1996, 1999) assessed the importance of networks in credit markets and showed how networks can help to

reduce search and screening costs in developing countries. As highlighted by Borjas (1992), it is natural to expect network effects to be stronger in immigrant communities, because they tend to be more socially cohesive than native communities. In particular, network effects can provide an explanation to ethnic clustering for immigrants. The existence of beneficial network externalities influences the location decision of prospective immigrants, because networks provide information about the host region labor market and help in the settlement process.

Networks can be very effective in overcoming information problems in the labor market. The role of networks in the labor market was first analysed by Montgomery (1991). With the help of an adverse selection model he showed that the use of employed referrals is beneficial both for workers and firms, since referrals help to solve problems related to the fact that the information about an unemployed individual's ability is asymmetric. For an unemployed person, thus, it could be easier to find a job if he has a network of friends and/or relatives with good connections in the job market. This is especially true for immigrants because, since they are newcomers in the labor market, they are more sensitive to information problems.

Munshi's (2003) research on Mexican immigrants in the US has been particularly valuable for my research. He analyzed network effects on the labor market outcomes among Mexican immigrants in the US by using individual panel data from a small number of Mexican communities. He solved the endogeneity problem that aroused due to correlation between the network and unobservable external shocks by adopting an instrumental variable approach. He chose lagged rainfalls in the origin community of the immigrants as an instrumental variable for the network. This variable was strongly negatively correlated with the size of the network of the immigrants in the United States, but it was not correlated with labor market at destination. Munshi found that the network significantly improved labor market outcomes among its members: not only did it find jobs for its members, it also channeled them into higher paying occupations. In building my empirical strategy I also adopted a two stages least squares

approach. I used exogenous variation in migration caused by the conflict in the province of origin of the immigrants as an instrumental variable for the size of the networks at destination. I expected the severity of violence to affect migration and thus the numerical strength of immigrants' networks. I analysed network effects among internal immigrants in Sri Lanka using data coming from Labor Force Surveys, which are held quarterly in Sri Lanka by the Department of Census and Statistics<sup>1</sup>. I collected data related to the ongoing conflict in the period of interest using several media sources (see below for a detailed description).

### **3. - The Data**

#### *3.1 Labor Force Survey*

I analysed the data of the Labor Force Survey produced by the Department of Census and Statistics of Sri Lanka. This survey covered the entire island except for the Northern and Eastern provinces<sup>2</sup>. It is conducted through a scientifically selected sample designed to represent the civilian non-institutional population. Respondents are interviewed to obtain information about the employment status etc. of each member of the household 10 years of age and older.

The Labor Force Survey covers a total of 4,000 households per quarter. These households are selected based on a two-stage stratified sampling procedure with no rotation. A new random sample is therefore drawn each quarter. I constructed my database by appending data from eight surveys, from the second quarter of 1997 until the first quarter of 1999. Each individual was

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<sup>1</sup> The Department of Census and Statistics (DCS) is the central statistical agency in Sri Lanka. It is responsible for collection, compilation, analysis and dissemination of all statistical data needed for planning, policy formulation. It is also with the function of monitoring the progress of various development activities and measuring the impact of various governmental policies.

<sup>2</sup> The territory of Sri Lanka is divided into twenty-five districts, which are grouped into nine provinces. The Northern and Eastern provinces are the provinces most severely affected by the armed conflict.

interviewed only once in his life, so I obtained a database made up of individuals interviewed at different points in time. Among the population, I selected a sub-sample of immigrants. To better identify the network variable, I defined an immigrant as a person who migrated across provinces. That is, I dropped the individuals who moved in a different district within the same province. For each immigrant I created a variable measuring the size of his/her network. The variable was defined as the number of individuals from the province of origin of the immigrant that were dwelling in the same province that the immigrant resided in<sup>3</sup>.

Following Bertrand *et al.* (2000), I divided this number by the population of the province of destination. I took out of the sample the individuals defined as not belonging to the labor force because I wanted to estimate the effect of the network on the employment outcome of individuals<sup>4</sup>. The final sample was made up of 6,248 immigrants.

In table 1.a I report the average location patterns of immigrants in the sample. The province of birth is reported in the rows and the province of residence of the immigrants is reported in the columns. The more represented province is the Western one, with 2,271 out of 6,248 individuals living there. The immigrants coming from the provinces affected by the war are reflected in the table. 446 individuals were born in the Northern and Eastern provinces, and their preferred destination is Western province, followed by North-western and North-central provinces. The sample doesn't

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<sup>3</sup> A more "micro" measure of networking would probably be desirable. I computed a district level measure of network and I tried to adopt it as dependant variable in the employment equation. Unfortunately, this variable turned out to be too noisy. The estimates obtained both in the first stage and second stage regressions were qualitatively very similar to those obtained using the province level measure of network but statistically not significant. This suggested that the district level measure might be too noisy due to measurement error. Therefore I chose to use the province level measure of network, which is less sensitive to measurement error.

<sup>4</sup> It would be really interesting to analyze the effect of the war on discouraged workers. I would like to investigate whether the migrants who were exposed to the conflict are more likely to become discouraged workers. It is possible that the traumas and shocks created by the war distort the incentives for the migrants to work or seek for a job. Unfortunately, the data available to me so far do not allow such an analysis.

include the observations about the individuals who migrated towards the two provinces affected by the conflict, because the Labor Force Survey didn't cover them. The exclusion of these two provinces may lead to a problem of "selection bias" which would produce a biased estimate of the network effect. During the collection of the data I didn't find any source reporting about the migration of individuals from the provinces not affected by the war to the Northern and Eastern provinces during the ongoing of the conflict<sup>5</sup>. I think that the "selection bias" problem shouldn't arise in this analysis because my sample includes immigrants belonging to the labor force and there is no evidence of migration to the Eastern and Northern provinces during the conflict.

Table 1.b reports the frequencies of the destinations of immigrants on average among every three months or quarter of a year. The Western province is by far the preferred destination among immigrants, with 36.3% of the total immigrant population living there. North-central province is the second preferred place, with 22.5% of the immigrants living there. The most neglected destination is the Southern province, which was chosen only by 4.7% of the immigrants, while Central, North-western, Uva and Sabaragamuwa all share around 9%.

In table 1.c I report the frequencies of origins of immigrants on average. The Central and Southern provinces are the most common origins among immigrants, with respectively 23.5% and 22.4% of individuals born there. 15.3% of immigrants were born in Sabaragamuwa. Fewer immigrants originated from the North-western, North-central and Uva provinces. This is the case also for the Northern and Eastern provinces, which are the two provinces affected by the war. Inequality in economic performance and poverty incidence across provinces are factors that are likely to affect migration.

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<sup>5</sup> I read newspaper articles related to the Sri Lanka war in the database Lexis Nexis and the news contained in the website of the Sri Lanka Monitor project. The Sri Lanka Monitor project was established by the British Refugee Council in December 1987, on the request of international NGOs. The objective of the Project is to provide information on Sri Lanka, with a focus on displacement and human rights.

As table 1.d<sup>6</sup> shows, there is a sharp difference in poverty incidence across provinces. Poverty incidence was by far the lowest in the Western province in 1996, with a poverty headcount of 11%, and North-central province had the next lowest poverty incidence of 21%. In contrast, the poorest provinces of Sabaragamuwa and Uva have headcount poverty rates of around 35 percent. The low poverty incidence in the Western Province is largely due to the location of Colombo where most of Sri Lanka's economic productivity is concentrated. The high incidence of privation in some other provinces is consistent with the evidence of the wide disparity in provincial share of GDP, with the Western province accounting for almost half of the country's GDP. It is clear that most immigrants are attracted to the Western province because it offers more opportunities in terms of income, while individuals migrate from the Southern province, Sabaragamuwa and Uva to escape poverty<sup>7</sup>.

Another factor that is likely to affect migration is an uneven distribution of unemployment rates across provinces. Two facts need to be highlighted. First of all, the distribution of unemployment rates across provinces is less uneven than we would expect. Sri Lanka's average unemployment rate is 8.8% and, apart from Uva (6%) and the Southern province (10.6%), the other provinces' rate is close to the average. The second fact is that unemployment does not seem to be correlated with poverty incidence. In fact, as table 1.d shows, unemployment figures for the provinces do not show any pattern of association with their ranking in terms of poverty incidence in Sri Lanka. In the Western province, for example, unemployment rate is slightly above the national average, despite its superiority in terms of GDP share. The Uva province, in contrast, records the lowest unemployment rate (6%) despite having the highest poverty incidence (37%).

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<sup>6</sup> The data were taken from the Department of National Planning and the Department of Census and Statistics of Sri Lanka. Unfortunately, Northern and Eastern provinces are still excluded from the table.

<sup>7</sup> The large and increasing inequality is a policy issue in Sri Lanka. In the last decade reduction in income poverty has been modest and uneven, with the gains being largely limited to Colombo and its neighboring districts. Not only the differences across provinces and districts, but also the gap between average urban and rural incomes has widened.

Unemployment might be not correlated with high incidence of poverty in Sri Lanka for two reasons. Firstly, data suggests that many college graduates and highly educated young people are unemployed in Sri Lanka mainly because they can afford to wait for better job opportunities<sup>8</sup>. Secondly, however low the wages are, the extremely poor must work simply because they cannot survive without a source of income<sup>9</sup>. Another factor that is likely to affect migration choices is political stability. In section 5 I will show that the intensity of conflict in the province of origin of immigrants is negatively correlated with the size of the network. This result suggests that war hinders migration.

Tables 1.e and 1.f show individual characteristics of the immigrants. The figures are average values computed across different surveys. Immigrants tend to be in their thirties, with an average age of 38.6 years. Individuals from Eastern and North-central provinces are significantly younger, with an average age respectively of 33.5 and 31.5. Men are more prevalent in the sample than women. The group from Northern province is the less heterogeneous, with 28.4% of individuals being female. The group from North-Central province, however, is the most balanced, with 43.3% of immigrants being female. The most represented ethnic group is Sinhalese. This is not the case for immigrants coming from the Northern province, the historical origin of the Tamil Kingdom. Among them the most represented ethnic group is the Sri Lanka Tamil. Also Eastern province is inhabited prevalently by the Tamil, but immigrants are mainly Sinhalese. We observe that among immigrants from Northern and Eastern provinces there are many Muslim, who were persecuted by

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<sup>8</sup> RAMA M. (1999) analyzes unemployment in Sri Lanka and concludes that a large proportion of the unemployed are young, relatively educated individuals who live with their parents and benefit from family support to continue their job search. Such unemployed individuals tend to seek a relatively good job, either in the public sector or private sector activities that are protected heavily by product and labor market regulations.

<sup>9</sup> The unemployment figures presented here however constitute a very partial picture. To understand better the links with poverty, it will be more useful to examine the relationships between wages, underemployment and poverty, which will require additional work since statistics on underemployment are not readily available.

Liberation Tigers of Tamil Eelam (LTTE). The Indian Tamil are the descendants of the Indian labor force imported by the British in the 1920s to work in tea gardens. They distinguish themselves from the Sri Lanka Tamil in regards to social and political matters. About 74% of immigrants are married, which is lower for immigrants from the North-Central and the Eastern provinces. This could be correlated with the fact that immigrants from those provinces are younger than the others.

Immigrants' level of education is generally quite high, especially for a developing country. On average, almost 70% of all immigrants achieved at least eight years of education, and 36% of them completed at least eleven years of mandatory schooling. Only 5% of the sample didn't receive any education<sup>10</sup>. Education levels are not homogeneous among immigrants; immigrants from the Northern and the Eastern province are more educated, with a lower percentage of illiterates (2%), while immigrants from the Central province and from Uva are less educated than the average.

Table 1.f reports the statistics on employment status and sector of occupation for employed individuals. On the average, 93% of the 6,248 immigrants are employed, and 7% of them are unemployed<sup>11</sup>. Immigrants from the Northern and Eastern provinces show higher levels of unemployment (respectively 10% and 13%). 68% of immigrants on average work in the rural sector, which could partially explain the negative correlation between years of education and employment (-0.02%). Finding a job could be harder for more educated job-seekers if the vacancies are concentrated in low-skills sectors. This statistic is different for immigrants who were born in the Northern province in which 74% work in the urban sector. In terms of descriptive characteristics, immigrants coming from the provinces affected by the war are in general younger and more educated than other

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<sup>10</sup> Sri Lankan education system has been celebrated in development policy circles and the economic literature for its success in providing widespread access to primary and secondary education and enabling the country to carry out comparatively high human development levels for a low income economy. This performance was the result of strategic public policy decisions, over several subsequent generations, to invest resources in education, health and other social services.

<sup>11</sup> I remind that I selected a sample of immigrant belonging to the labor force.

immigrants. Moreover, they are more likely to be unemployed, and if they do work they are employed mainly in the urban sector.

## DESCRIPTIVE STATISTICS

TABLE 1.a

## FULL SAMPLE: AVERAGE LOCATION PATTERNS

Residence	Western	Central	Southern	North-western	North-central	Uva	Sabaragamuwa	Total
<b>Birth</b>								
Western	0	123	134	221	169	78	162	887
Central	493	0	41	135	552	116	129	1,466
Southern	762	94	0	43	96	275	127	1,397
Northern	158	19	7	41	23	4	2	254
Eastern	67	30	8	10	45	20	12	192
North-western	201	62	10	0	281	18	45	617
North-central	79	56	10	38	0	12	13	208
Uva	139	66	29	13	7	0	20	274
Sabaragamuwa	372	101	57	68	235	120	0	953
Total	2,271	551	296	569	1,408	643	510	6,248

TABLE 1.b

## DESTINATION OF THE IMMIGRANTS (ON AVERAGE)

Province of residence	Frequencies	Percentage
Western	284	36.3
Central	69	8.8
Southern	37	4.7
North-western	71	9.1
North-central	176	22.5
Uva	80	10.3
Sabaragamuwa	64	8.2

TABLE 1.c

## ORIGIN OF THE IMMIGRANTS (ON AVERAGE)

Province of Birth	Frequencies	Percentage
Western	111	14.2
Central	183	23.5
Southern	175	22.4
Northern	32	4.1
Eastern	24	3.1
North-western	77	9.9
North-central	26	3.3
Uva	34	4.4
Sabaragamuwa	119	15.3

TABLE 1.d

## ECONOMIC INDICATORS BY PROVINCE (1996)

Province	Share of GDP*	Unemployment rates	Poverty Headcount (%)**
Western	43.7	8.9	11
Central	10.0	8.9	25
Southern	9.0	10.6	28
North-western	11.3	7.8	27
North-central	4.6	8.4	21
Uva	5.1	6.0	37
Sabaragamuwa	9.0	9.8	34

Source: Dept of National Planning.

Note: the shares do not add up to 100% since Northern and Eastern provinces are excluded from this table.

\*\* Source: Department of Census and Statistics (DCS).

TABLE 1.e

## INDIVIDUAL CHARACTERISTICS BY PROVINCE OF BIRTH

	Total	Western	Central	South- ern	North- ern	Eastern	North- western	North- central	Uva	Sabara- gamuwa
Average age (in years)	38.6	40.0	38.8	40.0	37.1	33.5	36.7	31.5	36.7	39.6
<b>Sex (%)</b>										
Male	64.8	65.3	65.9	66.6	71.7	64.1	62.7	56.7	62.8	61.9
Female	35.2	34.7	34.1	33.4	28.4	35.9	37.3	43.3	37.2	38.1
<b>Gruppo etnico</b>										
Cingalesi	84.3	89.5	79.5	95.9	16.9	62.5	95.3	95.2	74.8	85.1
Tamil Sri Lanka	8.6	2.8	11.1	1.8	59.5	17.2	2.4	1.0	15.3	8.8
Tamil Indiani	2.4	1.0	4.9	0.5	3.9	0.5	0.7	0.0	4.0	3.7
Mori Sri Lanka	4.0	5.8	3.8	1.7	19.3	16.2	1.6	3.4	3.7	1.5
Malay	0.3	0.5	0.2	0.1	0.0	1.0	0.0	0.5	0.4	0.4
Burgher	0.3	0.1	0.6	0.1	0.4	2.6	0.0	0.0	1.5	0.1
Other	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4
<b>Marital status (%)</b>										
Never married	22.1	18.5	22.2	20.3	28.0	30.7	23.5	32.2	24.8	20.7
Married	73.8	77.0	72.6	76.4	69.3	67.7	72.5	65.9	73.0	73.9
Widowed	3.0	3.4	4.1	2.4	2.0	1.6	3.4	0.5	0.7	3.6
Divorced	0.2	0.2	0.3	0.1	0.4	0.0	0.0	0.5	0.4	0.2
Separated	0.9	0.9	0.8	0.7	0.4	0.0	0.7	1.0	1.1	1.7

TABLE 1.f

## INDIVIDUAL CHARACTERISTICS BY PROVINCE OF BIRTH

	Total	Western	Central	South- ern	North- ern	Eastern	North- western	North- central	Uva	Sabarag amuwa
<b>Educational attainment</b>										
No Schooling	4.2	2.7	6.3	3.4	2.0	2.1	4.7	2.9	5.5	4.2
less than 5 years of education	11.5	10.0	16.9	8.7	7.1	8.3	12.5	7.2	8.8	11.4
5 years of Education	15.4	13.2	18.1	13.2	14.6	13.0	19.5	13.0	14.2	15.4
8 years of Education	29.6	32.9	27.6	29.4	22.8	32.3	29.5	34.1	31.0	29.5
G.C.E.(O.L), 11 years	22.3	26.0	17.9	24.3	21.7	25.0	19.0	22.1	23.4	24.3
G.C.E.(A.L), 13 years	12.4	10.9	10.3	14.3	24.4	14.1	10.5	14.4	12.8	11.5
University	4.6	4.2	2.9	6.7	7.5	5.2	4.4	6.3	4.4	3.6
<b>Employment status</b>										
Employed	0.93	0.93	0.95	0.95	0.90	0.88	0.92	0.91	0.92	0.92
Unemployed	0.07	0.07	0.05	0.05	0.10	0.13	0.08	0.09	0.08	0.08
<b>Sector of employment</b>										
urban	0.30	0.23	0.29	0.36	0.74	0.34	0.19	0.23	0.41	0.26
rural	0.68	0.77	0.69	0.62	0.24	0.64	0.80	0.75	0.55	0.71
estate	0.02	0.01	0.02	0.02	0.01	0.02	0.01	0.01	0.05	0.04

3.2 *Data on Conflict*

To complete my analysis I collected data on the conflict. The civil war between the Sri Lankan government and the rebels' armed group known as the LTTE has plagued the country since 1983 for more than 20 years<sup>12</sup>. It has created 68,000 casualties and has cost 2-3 percentage points of GDP growth per year. The conflict mainly interested the Northern and Eastern provinces, which were traditionally inhabited by the Tamil and claimed as independent by the rebels.

I needed an indicator of the conflict intensity in the place of origin of the immigrant in the period before the survey in order to develop an instrumental variable for the size of the network in the employment equation. An indicator of conflict intensity disaggregated by provinces and/or district was not available, so I had to search through the data to create a suitable indicator.

<sup>12</sup> Fortunately, the conflict ended in May 2009.

This part of the research is related to the branch of development studies that investigates incidences and costs of conflicts. In general the main difficulties encountered in understanding conflicts are associated with measurement. Measuring conflict incidence raises two fundamental issues: (i) the exact definition of conflict and the threshold at which an incident is defined as conflict; (ii) the conditions under which respondents might misreport instances of conflict. Keeping these issues in mind, the first step of my research involved the choice of a suitable indicator to measure conflict intensity. I followed the work of Varshney (2001) on communal conflicts in India and I selected the number of deaths as indicator of the severity of the conflict. The number of deaths is an accurate and consistent measure, and can be compared between areas and provinces as well as over time. One death victim in area A and one in area B have the same value. Seven deaths today have the same value as seven deaths ten years ago. Other severity indicators, for example, the number of incidents, injuries, and damaged or burned houses are not as accurate. For example, the number of incidents is difficult to determine; it can be a strike between security forces and the rebels, a suicide terrorist attack, or a week-long battle between LTTE and the army to defeat a city controlled by the enemy. Moreover, it is hard to compare incidents which took place in different places and in different times. In addition, gathering the information needed to correctly identify different incidents could be difficult and expensive. This suggests that the number of incidents sometimes cannot consistently indicate the severity of a conflict.

Once I had chosen the indicator, the second step of my research involved the selection of an information source. Since the army was directly involved in the conflict, government sources were not reliable. International organizations such as United Nations agencies and Amnesty International did not systematically report all events related to the conflict. By performing a research in the Lexis Nexis database, I found that some international Newspapers reported daily during the most intense phases and at least weekly during relatively calm periods, so I decided to collect

data on the conflict using international newspapers<sup>13</sup>. Unfortunately, it is reasonable to think that the international press systematically underreported facts related to the war, because the Sri Lankan government imposed censorship on all media including local and international newspapers, radio and television, during the most intense phases of the conflict.

The final step involved data collection. I performed a search in Lexis-Nexis in the category "World News" from the news source "Asia Pacific", using the following keywords: Sri Lanka together with (alternatively) Tamil, died, death, attack, killed, killing, fighting, guerrilla, bomb, bombing, victim, deceased. I read newspaper articles that contained those words and had been published between October of 1995 until the end of 1998 and I counted the casualties that they reported. I defined deaths caused by the conflict as all the casualties that occurred in battles, ambushes, attacks, suicide attacks, assassinations of political representatives from LTTE, and reported deaths of LTTE rebels that occurred in prisons due to tortures. I grouped the deaths quarterly and by province in order to obtain an indicator of conflict intensity for each province in each quarter. Table 2.a reports the average number of deaths that occurred by quarter in 1996, 1997 and 1998. There is not much variation in deaths across provinces, because the conflict is constrained mainly in the Northern and Eastern provinces. The Western province was affected by terrorist suicide attacks, the most dramatic of which took place in January 1996 at the Central Bank in Colombo, where 86 civilians were killed. Battles were concentrated in the Northern province. At the end of 1995 the army entered Jaffna city, the heart of the Tamil area, in the extreme north of the island. On May 13, 1997 the army launched operation "Jaya Sikuru" (certain victory) and the war shifted to the district of Vavunija and Kilinochchi, which are two districts in the Northern province sited below Jaffna. The aim of the operation was to assure a land route to

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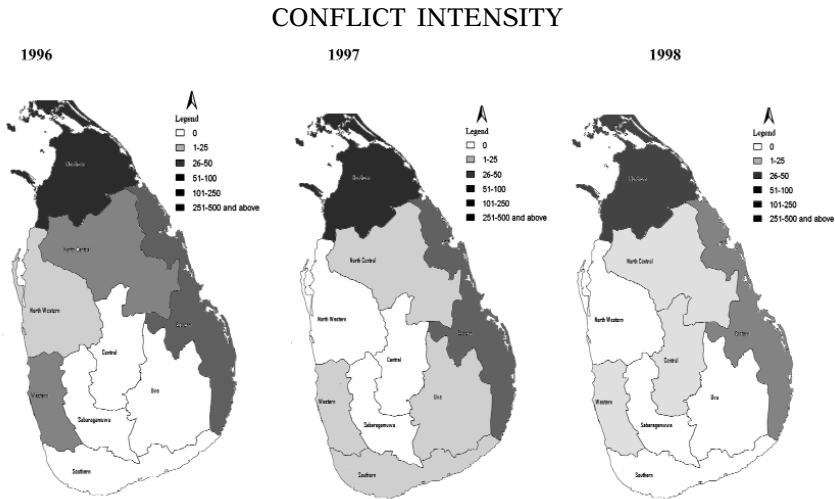
<sup>13</sup> The use of newspaper as source of information follows the work of TADJOEDDIN M. (2004) on social conflicts in Indonesia. He constructed a database of social violence by using a "media approach".

TABLE 2.a

AVERAGE NUMBER OF DEATHS CAUSED BY THE WAR

Province	1996	1997	1998
Western	43	5	11
Central	0	0	3
Southern	0	1	0
Northern	965	1,034	875
Eastern	207	181	71
North-western	8	0	0
North-central	28	15	2
Uva	0	4	0
Sabaragamuwa	0	0	0

FIGURE 1



Jaffna and break the isolation of the peninsula which, up to that time, could only be reached by sea.

The variation in conflict intensity across provinces is reported in figure 1. The colors of the map correspond to the figures in table 2.a figure 1 shows that, although the conflict is concentrated in the Northern and Eastern province, the other provinces also reported deaths caused by terrorist attacks or strikes.

During the construction of the indicator I had to deal with inconsistencies due to the fact that the number of reported deaths often varied across different sources. Each newspaper usually reported a different figure. To solve this problem, I followed once again the rule indicated by Varshney (2001) of using the lower figure. According to his study, when dealing with subjects that are emotionally and politically charged and where government data is unreliable, it is impossible to generate an inter-subjective consensus on the highest numbers reported, when scholars cannot find out “exactly how many” people died based on direct evidence and experience. However, it is possible to get a consensus on “at least so many people died”. Therefore, by choosing the “lower figure” I have to bear in mind its downward bias. Moreover, there were often inconsistencies within the same article because when there were battles or strikes between LTTE and the army some newspapers reported the different figures claimed by Official Military Sources, LTTE sources and unofficial military sources. In this case, as I found obvious discrepancies between rebels’ and army’s sources, I used the figures claimed by unofficial military sources that were more equal between the two sides.

#### **4. - Identification Strategy**

Social networks are informal institutions that can help solve information problems in the labor market. Some assumptions about the labor market are necessary in order to generate a role for social networks. I need to assume that only one type of job is available to workers, so that the individuals are either employed or unemployed, and that the level of unemployment in equilibrium is always positive, for example because of an exogenous job turnover. Finally I must introduce some sort of information problem in the labor market, like an information asymmetry, where the workers have complete information and the firm has incomplete information. The firm could choose to enlist the help of incumbent workers and so recruit able workers from their networks, in order to avoid adverse selection. We make the

assumption that the composition of networks is exogenously given. Assuming that ability is positively correlated within a network, the proportion of high ability workers will be higher on average in the incumbent high ability worker's network, as compared with the corresponding proportion in the market as a whole. At least some firms will use referrals in this case, drawing randomly from the unemployed members of the incumbent worker's network, instead of drawing from the pool of (all) unemployed workers in the market.

Due to the correlation between the network variable and some other unobservable covariates it is not possible to consistently estimate the impact of the network on the labor market outcomes of the immigrants with the method of Ordinary Least Squares (OLS). In order to explain the endogeneity problem I will make use of a revisited, simplified version of the model set up by Munshi (2003). I assume that there are only two possible labor market outcomes: the individual is either employed or unemployed. Employment outcome at the destination  $A$  for individual  $i$  who was born in province  $B$  can be expressed as

$$(1) \quad \Pr(E_{iA} = 1 \mid X_i) = C_A + \omega_i + \beta N_{A,B}$$

where  $E_{iA}$  if the individual is employed at the destination,  $E_{iA} = 0$  otherwise.  $N_{A,B}$  is the size of the network of the individual, measured as the number of immigrants from his province of origin  $B$  that are present at the province of destination  $A$ , divided by the population of the province of destination.  $\omega_i$  is an ability term which does not vary over time and  $C_A$  is an employment shock at the destination that is common across individuals but varies over time.  $X_i$  is the set of independent variables. Both  $\omega_i$  and  $C_A$  are unobserved by the econometrician and they create problems for consistent estimation of network effects in the employment regression because they are correlated with  $N_{A,B}$ . In fact, both individual ability and labor market conditions at the destinations could influence the individual migration decision. If we assume that only individuals with certain ability will decide to migrate, favorable conditions at the destination are associated with a lower

ability threshold. That is, a high  $C_A$  will be positively correlated with  $N_{A,B}$  in the equation. Alternatively, improved labor market conditions could hasten the speed at which immigrants achieve their target savings, increasing the rate of departure among the more established members of the network and biasing the network effects downward. The solution to the simultaneity problem is to develop an instrumental variable for  $N_{A,B}$  in the employment regression. A good instrument would determine  $N_{A,B}$ , while remaining uncorrelated with  $C_A$  or other direct determinants of employment. A hypothetical candidate that would appear to satisfy this condition is conflict intensity at the origin. We would expect lagged conflict shocks at the origin and employment shocks at the destination to be uncorrelated. The war deeply affects the labor market in the Eastern and Northern provinces because the rebels forcedly recruit civilians, including women and children, and at the same time they deprive civil population of work revenues through high taxes, decreasing labor incentives. For provinces not controlled by LTTE, the war is present in the form of suicide attacks that are likely to produce high level of political tension but should not affect the employment level. While the use of conflict intensity as a statistical instrument may solve the simultaneity problem in this setting, selectivity bias associated with the unobserved ability term  $\omega_i$  must still be accounted for in the equation. Intuitively, more favorable conditions at the destination lower the (unobservable) quality of the immigrants, biasing the estimation of  $\beta$  downward. Munshi (2003) solved this problem by treating  $\omega_i$  as an individual fixed effect in the employment regression. Unfortunately, I cannot do the same because panel data was not available. Consequently, I must keep this estimation bias in mind when interpreting empirical results.

## **5. - Empirical Results**

### *5.1 OLS Regression*

I developed a simple linear probability model to estimate

network effects in the employment equation<sup>14</sup>. The dependent variable is a dummy (Employed) which takes the value of one if the individual is employed, and zero otherwise. I ran the basic OLS equation:

$$(2) \quad \Pr(E_t = 1 | X) = X\beta + \varepsilon$$

The term on the left hand of the equation is the probability for each individual to be employed given a set of variables including individual characteristics as well as exogenous shocks.  $X$  is the vector of explanatory variables. The first element of  $X$ , that is  $X_1$ , is the size of the network for the immigrant at the destination. The other regressors are age, age squared, years of education and control variables for sex of the immigrant, region of residence, and quarter in which the survey was taken. It would be interesting to include the level of experience in the employment equation but unfortunately the data does not allow it. I am interested in estimating the effect of the explanatory variables on the probability of the individual being employed. Regarding the size of the network, that is  $X_1$  in the equation above, if we assume that firms use workers' referrals in their employment decisions, then the appropriate measure of the network is the proportion of employed immigrants at the destination (who are in a position to provide job referrals). Columns I and II of table 4 report estimation results of the OLS regression. In column I, I use the proportion of immigrants at the destination as the size of the network, while in column II, I measure the dimension of the network as the proportion of employed immigrants<sup>15</sup>. Given one standard deviation increase in the size of the network, the

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<sup>14</sup> A drawback of this model is that, unless restrictions are placed on  $\beta$ , the estimated coefficients can imply probabilities outside the unit interval [0, 1].

<sup>15</sup> More in detail, the variable that represents the size of the network for individual  $i$  is computed as the number of persons (or employed persons) that were born in the province of origin of the immigrant  $i$  and were living in his/her province of destination at the time of the survey, divided by the population at destination. To correctly identify the size of the network, I defined an immigrant as a person who migrated from a province to another, that is I dropped the observations of individuals who moved to another district within their province of birth.

probability of being employed is augmented by 1%. The estimated effect is significant at 0.1% level. When I define the network as the number of employed countrymen, the estimated effect is larger: given one standard deviation increase in the size of the network, the probability of being employed is augmented by 1.3%. The estimated effects are very low, especially considering that the mean level of employment in the sample is 93%. Such a result could be due to attenuation bias. Attenuation bias occurs when measurement error in the network variable attenuates the network effect in the OLS regression down to zero. The econometric measure of the size of the network is based on a random sample of individuals drawn from the population, so this variable would probably be measured with error if we were to treat the entire province as the social unit. However, the instrumental variable approach will avoid measurement error as well in this case, since the instrument conflict shocks at the origin determine the level of migration.

In regards to the other explanatory variables, being a woman reduces the probability of being employed, but only by 2%, and the estimation is significant at 10% level. One more standard deviation in the age of the immigrant increases his probability of being employed by 30%, while one more standard deviation in his square age decreases it by 28%. This means that the probability of being out of a job is highest for the youth, and declines rapidly with age. Under the quadratic specification adopted for the age variable, the unemployment probability increases again as individuals grow older. Regarding education, one more standard deviation in the years of schooling attained by the individual decreases his probability of being employed by 11%, and the result is significant at 1% level. The negative relationship between years of schooling and probability of being employed is related to the education system of the country and to the peculiarities of its labor market. Rama (1999) addressed the problem of unemployment among educated youth in Sri Lanka. Already in 1971, a report from ILO argued that unemployment among the educated had partly resulted from their high aspirations on entering white-collar employment and a desire for academic education. Such

## EMPIRICAL RESULTS

TABLE 3

## DESCRIPTION OF KEY VARIABLES

Variable	Description	Sample mean	Standard deviation	# of Obs.
<i>Educational and Labor market outcomes</i>				
Employed	Binary variable equal to 1 if the individual is employed	0.93	[0.25]	6,428
Network	Number of immigrants who were born in the province of origin of the individual and are present at the destination, divided by population in the province of destination (in thousands).	0.37	[0.036]	6,428
Network Employed	Number of employed immigrants who were born in the province of origin of the individual and are present at the destination, divided by population in the province of destination (in thousands).	0.18	[0.019]	6,428
Woman	Binary variable equal to 1 if the individual is a female	0.35	[0.48]	6,428
Age	Age (in years) at the time of the survey	38.6	[11.8]	6,428
Age squared	Squared transformation of Age.	1,627.8	[936.6]	6,428
Years of education	Number of years of education attained by the individual	9.59	[3.89]	6,428
<i>Geographic and ethnic variables</i>				
Tamil	Dummy equal to 1 if the individual is Tamil	0.09	[0.28]	
Other ethnic group	Dummy equal to 1 if the immigrant's ethnic group is nor Sinhalese nor Tamil (includes Moor, Indian Tamils, Burgher, Malay, European)	0.07	[0.25]	
Southern region	Dummy equal to 1 if the individual is living in Southern province, Uva or Sabaragamuwa	0.23	[0.42]	6,428
North-central region	Dummy equal to 1 if the individual is living in Central, North-Western or North-Central provinces.	0.40	[0.49]	6,428
<i>Conflict intensity indicators</i>				
Average deaths	Arithmetic mean of the number of deaths that were caused by the conflict in the province of origin of the immigrant in the six quarters before the survey	57.9	[220.3]	6,428

TABLE 4

## OLS REGRESSION. DEPENDENT VARIABLE: EMPLOYED

	OLS	OLS
Network	0.267 (0.06974)***	
Network Employed		0.669 (0.16401)***
Age	0.028 (0.00473)***	0.028 (0.00473)***
Age Squared	-0.0003 (0.00005)***	-0.0003 (0.00005)***
Woman	-0.041 (0.01748)*	-0.041 (0.01743)*
Years of education	-0.003 (0.00074)***	-0.003 (0.00074)***
Southern region <sup>3</sup>	-0.032 (0.01140)**	-0.033 (0.01129)**
North-central region <sup>3</sup>	-0.027 (0.00573)***	-0.029 (0.00480)***
Quarter FE	Yes	Yes
Constant	0.379 (0.08285)***	0.377 (0.08258)***
Observations	6,248	6,248
R-squared	0.11	0.11

Robust standard errors in parentheses.

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

Standard errors robust to clustering wrt immigrants' province of destination.

<sup>3</sup> Region dummies. The category of residence is Western region.

Western region = Western province

Southern region = Southern province, Uva, Sabaragamuwa

North-Central region = Central, North-Western, and North-Central province

explanation is coherent with the “skills mismatch” hypothesis, which states that educated workers expect better jobs than they actually have access to. This is combined with another policy concern that school drop-outs – grade 9, GCE O and A-levels, and university graduates – are entering the labor market ill prepared

for the world of work. Other reasons for the educated being unemployed could be the fact that students complete university at an older age, their inappropriate knowledge of English and the reluctance of private sector employers to recruit graduates. According to Rama (1999), in order to alleviate unemployment, universities should take in students who qualified to enter as soon as possible, so to decrease the time that passes between high school completion and entrance to university. Moreover, English language should be taught through out the university career and finally the private sector should be encouraged to recruit more graduates through incentives by the government.

The impact of geographic location of immigrants on their probability of employment is also significant. The estimated coefficients state that the Western province is largely the one that offers more opportunities. In fact, living in another province, either in the Southern or in the North-Central region decreases the immigrant's probability of being employed by 1%<sup>16</sup>.

## 5.2 *First Stage Regression*

As seen in section 4, the OLS estimate of network effect on employment outcomes of immigrants could be biased due to correlation with omitted variables. In this section I propose an

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<sup>16</sup> I also estimated partial effects of the analogous probit estimations. The probit estimates are very similar to the ones I obtained with the linear probability model. I also tried to include ethnic dummies in the vector of regressors  $X$ . Being Tamil rather than Sinhalese decreases the probability of the immigrant of being employed by 0.08%, and the estimate is significant at 10% level. Ethnicity is highly correlated with the instrument ("Average deaths"). Correlation between the dummy for Sinhalese Ethnic group and "Average deaths" is equal to (-0.38); correlation between the dummy for Sinhalese Ethnic group and "Average deaths" is equal to (0.36). This happens because the war is concentrated in Northern and Eastern provinces, which are the province of origin of Tamil and Moor immigrants, while there are almost no Sinhalese immigrants that were born there. Consequently, controlling for ethnic group is similar to control for the province of origin of immigrants. This reduces the variation in the instruments and it weakens its role in the first stage and second stage equations. Since neither the  $R^2$  nor the estimated coefficients and standard errors changed when I dropped out controls for ethnic group, I decided not to include them in the equation.

instrumental variable for the network variable and test whether it provides a good solution to the estimation problem.

Conflict at the origin is a valid instrumental variable for the size of the network at the destination if it is partially correlated with the size of the network once the other variables have been netted out, and if it is not correlated with the error term in the employment equation. Consider for a moment the following equation, where  $X_{i\lambda}$  is the size of the network for individual  $\lambda$  and  $Z$  is the instrumental variable. The instrumental variable is “Average deaths”, which is the arithmetic mean of the number of deaths which occurred due to the conflict in the province of origin of the immigrant in the six quarters that preceded the survey. It is a measure of the exposure of the individual to the conflict in the eighteen months that preceded the survey. In order to consistently estimate – in the main equation I ask  $\lambda$  to be different from zero and  $Z$  to be uncorrelated with  $\varepsilon$  in the linear projection of  $X_{i\lambda}$  on to all the exogenous variables:

$$(3) \quad X_{i\lambda} = \theta_0 + \theta_2 X_{2i} + \theta_3 X_{3i} + \dots + \theta_k X_{ki} + \lambda Z_i + u_i$$

Table 5 displays the results of the first stage regression. The standard errors are robust to clustering with respect to the immigrant’s province of birth. In column I the dependant variable is Network, while in column II it is Network Employed. The excluded instrument is “Average deaths”<sup>17</sup>. I find that there is a negative correlation between average lagged conflict and the size of the network. The immigrants whose region of origin was affected by civil war in the last eighteen months have smaller networks. There are three main reasons for such a result: first of all, the rebels prevent migration from the regions under their control; secondly, the life of displaced persons at the destination is often not secure; finally, individuals don’t want to leave because they are afraid to lose their properties whenever they leave them

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<sup>17</sup> The dependent variable, as well as the error term, are not indexed by time, but vary only across provinces. So even if the instruments are referred to different point in time, there isn’t any auto regressive process.

TABLE 5

## FIRST STAGE REGRESSION

Dependant Variable	Network	Network Employed
Age	-0.00001 (0.0003)	-0.00002 (0.00017)
Age Squared	0 0	0 0
Woman	-0.0029 (0.00132)*	-0.0014 (0.00068)*
Years of Education	-0.0007 (0.00017)***	-0.0004 (0.00010)***
South region	0.0005 (0.00178)	0.0005 (0.00219)
North-central region	0.0256 (0.01836)	0.0127 (0.00935)
Average deaths	-0.00002 (0.00001)**	-0.00001 (0.00000)***
Constant	0.0255 (0.00626)***	0.0144 (0.00314)***
Quarter FE	Yes	Yes
<i>F</i> test	9.58	14.10
Partial <i>R</i> <sup>2</sup>	0.0190	0.0277
Observations	6,248	6,248

Robust standard errors in parentheses.

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

Standard errors robust to clustering wrt immigrants' province of origin.

abandoned. In the period during which I analyzed the war, it was condensed within the Northern and Eastern provinces. These two provinces were completely controlled by LTTE. Government public administration was fully replaced by the rebel's and the justice system, schools and hospitals were run by LTTE. LTTE imposed severe restraints to the mobility of the population that lived in areas under their control.

During wartime the rebels prevented migration because, since they recruited soldiers among civilians, and especially among the

youth, the escape of refugees meant a loss of military force for them. The comparative advantage of LTTE army with respect to the Government army was given by the large number of children and young soldiers ready to commit suicide and die for Eelam, the Tamil Kingdom. Intimidations and threats were used by the rebels to recruit combatants. Most often young men and women joined LTTE to save their relatives from torture and persecution. Therefore, LTTE limited as much migration as possible from Northern and Eastern provinces. The people that managed to escape had to pay a lot of money in order to corrupt security forces on both sides and pass through the checkpoints<sup>18</sup>. The Sri Lankan army also imposed severe restraints to the mobility of the population, especially the Tamil. There was a widespread sense of panic and fear of suicide terrorist attacks, especially after the bombs at Colombo Central Bank in January 1996 and at the Temple of the Tooth in Kandy in January 1998<sup>19</sup>. In Colombo, every Tamil person was halted by policemen. If he/she did not speak Sinhalese, which was quite common since there were separate schools for Sinhalese and Tamil, the policemen would bring him/her to prison. The life of Tamil individuals in Colombo was not very safe, especially if they were not wealthy and cannot afford to pay bail in case they are arrested. However, those persons who decided to stay might confront a lower risk of directly suffering from the violence than those who decided to leave. Moreover, individuals often refrained from leaving their assets during wartime. On the one hand, the prevalence of conflict at the place of origin could be expected to lower the market demand for housing, leading to difficulties in selling these assets. On the other hand, individuals were afraid to lose their assets and not have them anymore when they came back: not only houses could be damaged or destroyed during battles, they could also be expro-

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<sup>18</sup> Even during peace time, it is necessary to pay fines to enter and exit LTTE territories. These limitations become tighter during most intense phases of the conflict, and relax when the conflict is over.

<sup>19</sup> On the 25<sup>th</sup> of January, 1998 a suicide terrorist attack killed thirteen persons in Kandy, in front of the entrance of the holiest place of Sinhalese Buddhism, where a tooth of Siddharta is believed to be hedged in.

priated by the army or the rebels, and this was more likely to occur if they were abandoned.

The  $F$ -statistic is a weak instrument diagnostic. The  $F$ -statistic is higher when the endogenous variable in the employment equation is Network Employed rather than Network (respectively 14.1 and 9.58). In the first case the value of the  $F$ -statistic is higher than 10, while in the second case it is slightly lower than 10, which is considered the threshold value<sup>20</sup>.

As we can see from the  $F$  statistic of the first stage regression, the instruments are more effective in explaining the variable Network Employed than the variable Network. This suggests that the rebels impose more restraints on the mobility of individuals that are more likely to be employed, which is reasonable because they are probably also more valuable as potential soldiers.

The results are robust to different specifications of the conflict indicator<sup>21</sup>.

### 5.3 *Second Stage Regression*

The first stage results show strong evidence that the conflict hinders migration from the provinces affected by the war. So I

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<sup>20</sup> STAIGER D. and STOCK J. (1997) suggested that a value less than 10 is problematic and a value less than 5 is a sign of extreme finite-sample bias. They showed that  $F > 10$  ensures that the maximal bias of the IV estimator relative to OLS is no more than 10%. This threshold falls to around 6.5, for example, if one is comfortable with bias in IV of 20% of that for OLS. So a less strict rule thumb is  $F > 5$ .

<sup>21</sup> In order to test whether there is a non linear relationship between the conflict and the size of the network, I also tried to include a quadratic specification of the conflict intensity. I found that the relationship is actually linear.

I created a continuous variable which takes value in the interval (0, 1) and represents the frequency with which the province was affected by the conflict in the last six quarters. The variable was built in the following way: given indicators of conflict intensity in  $(t-1)$ ,  $(t-2)$ , ...,  $(t-6)$ , I created six dummy variables equal to 1 if the number of deaths in  $(t-1)$ ,  $(t-2)$ , ...,  $(t-6)$  were above thirty. Then I computed an arithmetic mean of those six binary variables, and I obtained a continuous variable which takes values into (0, 1) and represents the number of quarters out of six in which the province of origin of the individual was affected by the conflict. I called this variable "conflict frequency"; it is an alternative measure of the immigrant's exposure to the conflict. The results of this analysis are in the *APPENDIX II*.

ran the second stage regression to see whether the instrumental variable technique improved the estimation of the network effect in the employment equation.

Table 6 reports the results of the second stage regressions<sup>22</sup>. They confirm the results of the simple OLS regression: the size of the network has a positive, significant effect on the probability of the individual being employed, but this effect is still small in magnitude.

One more standard deviation in the predicted size of the network increases the immigrant's probability of being employed by 4.4%. When we consider "Network employed", instead, the marginal effect of one standard deviation on the employment probability is equal to 3.6%. Differently from what we observed in the OLS estimates, the effect of Network in the second stage regression is more remarkable than the effect of "Network employed". This is consistent with the results we found in the first stage regression: the war is more effective in preventing migration of the individuals that are more likely to find a job at the destination. The estimates that we obtained with the instrumental variable regression are much higher than the ones we obtained in the OLS regression. Attenuation bias could account for this difference. My analysis presents some shortcomings. The Linear Probability model is not very reliable, since unless  $X$  is severely restricted, the predicted values could be outside the unit interval. I computed the number of observations for which the fitted value of the simple OLS model is bigger than one or smaller than zero, and I found that it happens for around 1,350 observations out of 6,248. Nevertheless, the Linear Probability model is still very helpful in finding the relevant variables in a regression, rather than to estimate their effect. Other sources of weakness of my analysis come from the data. First of all, since panel data was not available, I cannot control for individual unobserved ability (we saw that the possible correlation between the size of the network and omitted ability is a source of endogeneity). Secondly, I don't

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<sup>22</sup> The results are robust to clustering with respect to immigrant's province of birth, because this is the geographic dimension where the instrument varies.

TABLE 6

SECOND STAGE REGRESSION.  
DEPENDENT VARIABLE: EMPLOYED

	2SLS	2SLS
Network	2.954	(0.57399)***
Network employed	4.608	(0.66734)***
Age	0.028	0.028
	(0.00397)***	(0.00398)***
Age Squared	-0.0003	-0.0003
	(0.00004)***	(0.00004)***
Woman	-0.0336	-0.036
	(0.00880)***	(0.00855)***
Years of education	-0.0009	-0.001
	(0.00008)***	(0.00008)***
Southern region	-0.0371	-0.03777
	(0.00998)***	(0.01239)***
North-central region	-0.0977	-0.08062
	(0.04504)**	(0.03604)**
Quarter FE	Yes	Yes
Constant	0.3201	0.32925
	(0.08693)***	(0.08086)***
Observations	6,248	6,248
<i>F</i> test	9.58	14.10
Partial <i>R</i> square	0.0190	0.0277

Robust standard errors in parentheses.

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

Standard errors robust to clustering wrt immigrants' province of origin.

have any information about the year of arrival of the immigrant at destination. Consequently, I cannot divide the sample into newcomers and old and more established immigrants. This would be very useful to better identify the effect of conflict on migration. Moreover, we expect network effects to be stronger for new immigrants: as they are newcomers in the labor market, they are more sensitive to information problems. Finally, while we expect more established immigrants to have a positive effect on the

probability of newcomers of being employed, the effect of newly arrived unemployed network members could be negative, as they are competitors in the labor market.

## **6. - Conclusions**

After having illustrated the conditions under which social networks emerge in the labor market, I adopted an instrumental variable approach to estimate network effects among a sample of roughly 6,000 individuals who migrated within Sri Lanka. In particular, I wanted to test whether the networks improved the labor market outcomes for their members. I found some evidence that the immigrants with larger size of the network have a higher probability being employed. The estimated network effects, although very small in magnitude, are qualitatively in line with the recent empirical works on the effect of immigrant's networks on labor market.

The original contribute of my paper is the attempt to link civil conflict with the functioning of informal institutions in labor markets. This paper shows strong evidence that civil war in Sri Lanka affects the freedom of mobility of the individuals within the country. In fact, the immigrants that were born in provinces affected by the conflict have smaller networks. I used this exogenous variation in migration caused by the conflict to instrument for the size of the network in the employment equation. This result is robust to a variety of specifications of the network variable and of the indicator of conflict intensity.

The consequences of civil conflicts in the economy and the society as a whole are still a rather unexplored field in development economics. I think that an interesting extension of my work would imply the analysis of how the war distorts labor incentives and thus affects inflows and outflows from labor force rather than from unemployment pool.

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<sup>23</sup> United Nations Support facility for Indonesian Recovery.

