Università Commerciale "Luigi Bocconi" Milano

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Ph.D. in Economics

ESSAYS IN POLITICAL ECONOMICS AND DEVELOPMENT ECONOMICS

GAIA NARCISO

Matr. n°: 902221

Thesis Committee

Prof. Eliana La Ferrara, Bocconi University

Dr. Beata S. Javorcik, The World Bank

Prof. Guido Tabellini, Bocconi University

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Contents

Introduction

The present thesis investigates topics in Political Economics and Development Economics.

In the first chapter "Political Institutions, Voter Turnout and Policy Outcomes", joint with Eileen Fumagalli, we question whether the impact of constitutions on economic outcomes (Persson and Tabellini, 2004) is direct. We show that voter turnout is the channel through which forms of government affect economic policies. We provide evidence of the existence of two relationships: the first links constitutions to voter turnout; the second connects voter turnout to policy outcomes. Presidential regimes are found to induce less voter participation in national elections. We then analyze the impact of constitutional variables and voter participation in shaping fiscal policies. Higher participation induces an increase in government expenditure, total revenues and welfare state spending. We conclude that citizens' political behaviour rather than politicians' incentives becomes the driving force connecting institutions to policy outcomes.

The second chapter, "Differentiated Products and Evasion of Import Tariffs", joint with Beata S. Javorcik, analyzes the functioning of one particular institution: customs. We provide evidence that differentiated products may be subject to greater tariff evasion due to the difficulties associated with assessing the quality and the value of such products, thus creating greater scope for tariff evasion on the part of importers and corrupt customs officials. Using product-level data on trade between Germany and 10 Eastern European countries during 1992-2003 we demonstrate empirical support for this hypothesis. We show that the trade gap, defined as the discrepancy between the value of exports reported by Germany and the value of imports from Germany reported by the importing country, is positively related to the level of tariff in 8 out of 10 countries. Further, we show that the responsiveness of the trade gap to the tariff level is greater for differentiated products than for homogenous goods. Finally, we provide evidence that greater tariff evasion observed for differentiated products takes place through misrepresentation of import prices.

Finally, the last chapter analyzes an informal institution: migration networks. In the trade and migration literature, networks have been extensively analyzed in their role of providing help and diminishing newcomers' migration costs. This chapter sheds light on another, so far unexplored, aspect of migration networks. I analyze the role of networks in providing information to potential migrants. I distinguish between two types of information: potential migrants can either have access to information from friends in the

destination country (direct information), or they can have access to information from friends in the home country and from media (indirect information). By means of a theoretical model, I am able to show that directly informed migrants correctly update their prior conjectures about the viability of a destination country by using previous migrants' payoffs. Indirectly informed migrants, on the other hand, base their migration decision on their prior only. I use a survey conducted by EUROSTAT in Italy among Ghanaian migrants. Indirectly informed migrants are found to be more likely to regret their migration decision, as they might have migrated on the basis of extremely positive conjectures. Directly informed agents, on the other hand, are more likely to be satisfied about the migration choice also after controlling for other network variables. The results are robust also when I consider a more restrictive measure of information.

Chapter 1

Political Institutions, Voter Turnout and Policy Outcomes

Eileen Fumagalli and Gaia Narciso

1.1 Introduction

The impact of political institutions on policy outcomes has gained much attention in the literature over the last years. Theoretical research has shown how forms of government and electoral rules can shape fiscal policies[1]. Torsten Persson and Guido Tabellini (2004) were the first to empirically examine the economic impact of constitutions on a large set of democracies. In line with the theoretical research, Persson and Tabellini show that presidential regimes lead to smaller governments than parliamentary systems. Further, a majoritarian electoral rule induces smaller government spending, smaller welfare programs and higher budget surplus relatively to a proportional rule.

Taking the work of Persson and Tabellini (2004)[2] as our starting point, we question whether the impact of constitutions on economic outcomes is direct. PT estimate a reduced form and interpret it in the light of the theories underlying the importance of constitutions for politicians'incentives. We claim that behind PT's reduced form, the structural model goes through electors' behaviour and voter turnout: we show indeed that the way forms of government influence policies is entirely mediated by voter participation. More specifically, we provide evidence that presidential regimes have a negative impact on electoral participation. On the other hand, voter turnout positively and significantly affects total government expenditure, government revenues and welfare state. Our results deepen the explanation for PT's findings: forms of government affect policies entirely through voter turnout.

The novelty of this work stands in the introduction of citizens' political behavior, rather than politicians' incentives, as the driving force connecting institutions to policy outcomes.

The rest of the paper is organized as follows: section 1.2 summarizes PT's results and explains how this comment extends their analysis. In sections 1.3 to 1.6, we empirically investigate the

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[1]See Persson and Tabellini (2000) for an extensive review of the theoretical literature on this topic.
[2]From now on, we will refer to Persson and Tabellini (2004) as PT.

interaction of voter turnout with constitutional variables and its role in explaining fiscal policies. Finally, in section 1.7 we summarize our results and conclude the paper.

1.2 Constitutional Rules and Fiscal Policy Outcomes

PT empirically estimate the effect of electoral rules and forms of government on fiscal policy outcomes. Concluding their paper, PT point out that they "*have not been able to identify whether constitutional rules operate through a direct effect (...) or through indirect effects via altered political representation*" (PT p. 42).

The aim of this paper is to show that voter turnout is the channel through which constitutional rules affect economic policies. Therefore, we test the existence of two relationships, the first connecting political institutions to voter turnout and the second linking voter turnout to economic policies.

From an empirical point of view, the first link has been widely studied with regards to the effects of the electoral rule on turnout decisions. Among others, Blais (2000) shows that turnout is higher in proportional systems. Proportional rules are indeed usually associated with a larger number of parties and more competitive elections. To the best of our knowledge, there is no study of the effects of political regimes on turnout[3]. We empirically show that forms of government do significantly affect turnout rates. Presidential regimes induce less participation relative to parliamentary systems. This result is robust even when we relax the conditional mean independence and we instrument government regimes.

Regarding the second relationship between voter turnout and policy outcomes, many studies

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[3]The only exception is the work by Powell (1982). He finds lower turnout rates in countries with a presidential regime *and* a majoritarian system; the explanation provided is that these countries have a weaker party system and less mobilizing voting laws.

have analyzed related topics. The abolition of poll taxes and literacy tests in the US is found to have a positive impact on welfare state (Husted and Kenny, 1997). Further, as the franchise was extended to individuals from the lower part of the income distribution, government spending increased in Europe (Aidt, Dutta, Loukoianova, 2005). A similar argument might be applied to voter participation in presence of universal franchise. Empirical studies (Blais, 2000, Wolfinger and Rosenstone, 1980) show that the median income of electors is higher than the median income of the actual voting age population. This bias in voter representation might eventually lead to a bias in policy choices (Lijphart, 1997). In line with this reasoning, Mueller and Stratmann (2003) have analyzed the effects of turnout rate on policy outcomes. Voter participation is found to have a negative effect on income inequality and a positive impact on the size of government. Unlike Mueller and Stratmann, however, we focus on the *interaction* between electoral participation and constitutions in influencing a number of economic variables such as total government, revenues, welfare state and budget surplus. The Instrumental Variable analysis shows that higher turnout rates lead to larger broad programs, higher government revenues and more generous welfare states.

We conclude that forms of government affect electors' behaviour in terms of turnout at elections. This in turn affects economic policies. Therefore, the impact of forms of government on policy outcomes is entirely mediated by voter participation.

1.3 Voter Turnout

Most of the data we use come from the two data sets employed by PT. The first one is a cross-country data set containing information on 85 countries classified as democracies in the 1990s, where observation units are average values over the period 1990-1998. The second data set is a panel containing annual data on a subset of 60 countries over the period 1960 to 1998.

The quality of a democracy is defined on the basis of two indexes. For the cross-country data set, the measure is the Gastil Index of Political and Civil Rights produced by Freedom House. The Gastil Index takes values from 1 to 7, where low values correspond to better democracies. In the 85-country data set, both free and semi-free democracies are included (Gastil Index less or equal to 5). In the panel data set, instead, we employ a modified version of the Polity IV index[4].

The voter turnout rate is defined as the proportion of votes at national elections to the voting age population[5].

Table 1 reports the descriptive statistics regarding the relation between institutions and voter turnout on the basis of the 60-country panel data set.

Insert Table 1 here

First, we compare turnout rates on the basis of the electoral rule. In line with PT, countries in which the lower house is elected through a plurality rule are classified as majoritarian (*Maj*=1). Therefore, non-majoritarian electoral rules include both mixed and proportional systems. Participation is lower in countries with a plurality rule. The difference between voter turnout in majoritarian and non-majoritarian systems is still positive and statistically significant when we consider the averages over the 1990s. This finding is consistent with the empirical evidence in the political science literature we mentioned in Section 2.

In the last row of Table 1, we compare voter turnout in presidential and parliamentary systems. A country is coded as presidential if the government is not subject to a vote of confidence by the Parliament (*Pres*=1). If a vote of confidence is present, the country is defined as parliamentary. Participation in elections is higher in parliamentary systems than in presidential systems and the difference is statistically different from zero. The average turnout in presidential systems amounts

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[4]See Persson and Tabellini (2003) for a detailed description of the data.
[5]See Data Appendix.

to 58% against a much higher rate of 75% in parliamentary systems. This substantial difference holds also when we restrict our attention to the larger cross-country data set.

These stylized facts are the starting point of our analysis: from Table 1 it appears that there exists a correlation between voter turnout and political institutions. In the next section, we will show that constitutions do shape voter turnout.

1.4 Do constitutions shape voter turnout?

The focus of this section is to address two main issues; firstly, to analyze the relationship between constitutions and voter turnout and, secondly, to identify the exogenous instruments for electoral participation required to assess its impact on economic policies.

The data set employed in this section is the extended 85-cross-country data set.

We focus on two sets of determinants: *constitutional variables,* as expressed by the form of government and the electoral rule (*Presidential, Majoritarian*) and *socio-economic variables.*

$$Turnout_i = \alpha_0 + \alpha_1 * maj_i + \alpha_2 * pres_i + \boldsymbol{\beta} \mathbf{X}_i + \varepsilon_i \tag{1}$$

where $\mathbf{X}_i$ represents the vector of controls. We are mainly interested in the effects of constitutions on electoral participation, *i.e.* in the sign and the statistical significance of the coefficients α_1 and α_2.

First, we assume that institutions and voter turnout are conditional mean independent. Under this assumption, the OLS estimator is unbiased and consistent for eq.(1). We then relax this assumption, allowing for an Heckman correction.

Insert Table 2 here

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Column 1 in Table 2 shows the baseline specification where average voter turnout is regressed on the two constitutional variables, majoritarian rule and presidential regime, and a set of socio-economic variables.

Constitutions and electoral laws might regulate voting, in some cases by introducing sanctions for those who abstain. Empirical studies (Powell, 1982, Jackman, 1987, Blais, 2000) show that voting laws are indeed effective in inducing higher voter participation. We include a dummy variable which takes a value of 1 in presence of compulsory voting laws and 0 otherwise[6]. We control for the percentage of legislators elected in national districts rather than in subnational districts[7]. This variable should capture the distance between voters and candidates. The prior is that the higher the share of candidates elected at national districts, the lower the electoral participation.

Education is a key variable in explaining voter turnout at a micro level. Wolfinger and Rosenstone (1980) and Blais (2000) empirically show that the propensity to vote does increase substantially with education. Therefore, we insert the country's education level measured by the total enrollment in primary and secondary education as a percentage of the relevant age group in the population.

The log of total population is included in order to proxy the weight of one single vote whereby the larger the population the lower the weight. Being a member of a group or a social network has been found to have a positive impact on voter turnout. Groups may provide both higher social pressure to vote and a bigger chance of influencing results. For example, union members are found to turn out more than non-union members as shown by Freeman (2003) and Blais (2000). We take these group effects into account by inserting union density among the socio-

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[6]See Data Appendix for a description of the Compulsory Voting variable.
[7]See Persson and Tabellini (2003).

economic determinants[8]. In addition, we control for the presence of a federal structure, the real GDP per capita, the Gini index of income distribution, the quality of democracy (*Gastil Index*), and the degree of ethnic-linguistic fractionalization of the country (*Avelf*)[9]. We were concerned that the results could be biased towards particular geographical areas or colonial origin. Colonial history is indeed relevant for the institutional setup of a country (Hall and Jones, 1999, Persson and Tabellini, 2003, Acemoglu, Johnson and Robinson, 2001, Acemoglu, 2005). To this end, we control for continents (*Latin America*, *Asia*, *Africa*, *OECD*) and colonial variables (English colonies, Spanish-Portuguese colonies and other colonies).

Unsurprisingly, compulsory voting laws seem to be effective in inducing higher turnout. The proxy for the education level has a positive although not statistically significant impact on voter participation.

In line with our prior, the higher the share of legislators elected at national districts rather than at subnational districts, the lower the turnout rate. Countries which are more ethnolinguistically homogenous, *i.e.* those having a lower *Avelf index*, are associated to higher voter turnout: as pointed out by Blais (2000), voting acts as a way of *"expressing one's sense of belonging to the larger community"* (p. 52).

The coefficient on the quality of democracy (*Gastil Index*) is not statistically significant but it has the expected negative sign: lower values of the *Gastil Index* are associated to better democracies. Federal countries, instead, are associated to lower electoral participation.

Union density has a positive and highly significant impact on political participation. Unions seem to induce a higher turnout rate, which supports the view that social networks are likely to generate contagion effects on voting.

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[8]See Data Appendix for a description of the Union Density variable.

[9]The index of ethno-linguistic fractionalization takes values between 0 (homogeneous) and 1 (strongly fractionalized). See Persson and Tabellini (2003).

The estimated coefficient on real per capita GDP positively affects voter turnout, although the coefficient is not statistically significant. When analyzed at a micro level, participation and income are usually found to be positively correlated. However, in cross-country studies such relationship becomes less clear[10]. Unexpectedly, population has a positive and significant impact on voter turnout, while the Gini index of income distribution is not significant.

The electoral rule does not significantly affect participation rates, although the sign of the estimated coefficient on the electoral system is as expected.

Presidential regimes negatively affect voter turnout rates at the 1% significance level. This result holds in more sophisticated specifications and it is actually what mainly supports the idea of this work. The form of government seems to effectively shape voter turnout.

The conclusion we draw from this baseline analysis is that, after controlling for socio-economic variables, forms of government affect voter participation. On the other hand, the electoral rule as defined by the dummy variable *Maj* has no role in explaining turnout in contrast with our priors. However, this result is very likely to be driven by the way majoritarian systems are defined.

In the second column, we investigate the role of electoral rules in influencing voter turnout by adopting a continuous measure of district magnitude, *Magn*, instead of the binary variable *Maj*. District magnitude captures the size of electoral districts in terms of the number of seats assigned to each district. It takes values between 0 and 1, where 1 represents single-member districts, as in the U.K. system, and 0 corresponds to systems characterized by one single national district, as the Israelian system.

The new result regards indeed the electoral rule, which is now relatively effective in influencing participation: district magnitude does affect electoral turnout. The higher the number of seats in the district, the higher the voter participation. This result is in line with the political science

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[10]See Mueller and Stratmann (2003).

literature, as proportional systems are very highly correlated with district magnitude. On the other hand, presidential regimes still negatively affect voter turnout at 1% level

Next, we generalize the link between voter turnout and constitutional variables, by relaxing the conditional mean independence assumption and allowing institutional variables to be endogenously determined. Persson and Tabellini (2003, 2004) propose as instruments for constitutional variables the following set of variables: the date of origin of the current constitution, the age of the democracy, the distance from the equator, and the fraction of the population speaking English or any other European language. Acemoglu (2005) has recently pointed out a few shortcomings in the use of this set of instruments for constitutions. In particular, some concerns arise regarding the validity of the distance from the equator variable and the fraction of the population speaking English or any other European language. These variable should capture the penetration of European conquerors (Hall and Jones, 1999) and their impact in shaping the quality of institutions rather than the type of institutions. We deal with this critique by introducing a new instrument for presidential regimes. We create a dummy taking value 1 if the country was a monarchy in the past but it is not any more. For example, Italy, which used to be a monarchy, is assigned value 1. The rationale is that the likelyhood of adopting a parliamentary regime is higher if a country has been a monarchy in the past[11].

As the endogenous explanatory variable, *Pres*, is binary, we can make use of the *dummy endogenous variable model* by Heckman (1978)[12]. In column 3, we report the results of the second stage regression of the two-stages Heckman estimation, when Presidential system is treated as the endogenous variable. The specification is rich as it includes all the covariates and the geographical and colonial history variables. The estimated correlation coefficient between the error terms in

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[11]Out of 33 presidential regimes in our sample, only 4 countries used to be a monarchy. See Data Appendix for details.

[12]See also Wooldridge (2002).

the first and the second stage is quite low (ρ is equal to 0.020), which means that the conditional mean independence is likely to hold. The coefficient estimates are indeed very close to the OLS estimates. Presidential regimes still negatively affect voter turnout. All the other covariates maintain their significance as in previous columns. We have also run a similar exercise by treating *Maj* as the endogenous variable. However, the estimates do not differ from the previous specification, therefore we do not show the results.

Finally, in the last column, we perform the same exercise, *i.e.* treating presidential regimes as the endogenous variable, but introducing the district magnitude instead of the electoral formula.

Presidential regime and smaller electoral district still negatively affect voter turnout, and the estimated coefficients are very similar to the OLS estimates.

This evidence sheds light on what we consider the *first* relationship between constitutions and voter turnout. The effect of forms of government on voter turnout is robust even when we relax the conditional mean independence and we instrument constitutions. This shows that presidential regimes do induce less turnout. The impact of the electoral formula as described by the bivariate variable *Maj* is somehow less strong than that of the form of government. However, once a continuous measure of electoral systems is introduced, the relationship between electoral systems and turnout appears clear: proportional systems are associated to higher voter participation. Having proved the first link, we now turn to the second one in order to understand the impact of voter turnout on economic policies.

1.5 Voter Turnout and Policy Outcomes: a cross-country analysis

A first attempt to study the relationship between voter turnout and economic policies has been recently done by Mueller and Stratmann (2003). Their conclusions support our argument that electoral participation induces larger government size. However, the main point of our analysis is more subtle. Unlike Mueller and Stratmann, we are not solely interested in showing the impact of voter turnout on different measures of policy outcomes. Our idea grounds on the relation between participation and constitutions. To this end, it is crucial to study the *interaction* between constitutional variables and voter participation in affecting fiscal policies.

We investigate whether turnout can account, *inter alia*, for government expenditure, welfare state, and government budget surplus. In this section, we present the results obtained from using the cross-country data set. In Section 6, we extend the analysis over time by using the panel data set.

PT empirically show the effects of political institutions on economic policy. Majoritarian elections and presidential systems are found to negatively and significantly influence total government spending. We depart from their analysis to show that voter turnout is actually the channel through which presidential regimes affect policy outcomes.

Participation is treated as endogenous. It is indeed very likely that, in countries with more generous economic policies, citizens are more willing to turn out in order to keep their status quo. Again, good instruments must be found. Most of the determinants of voter turnout are endogenous to policy outcomes and they cannot be used as valid instruments. On the basis of the analysis conducted in Section 4, we concentrate on a set of four instruments.

Compulsory voting laws can be confidently used as instrument as there is wide agreement on

their effectiveness in stimulating voter turnout.

The share of legislators elected at national district level rather than subnational electoral district does have an impact on electoral participation, as the more distant candidates and voters are, the lower participation.

In Section 4 we have shown that more ethnolinguistically homogenous countries are associated to higher voter turnout. Therefore, we introduce the *Avelf Index* as instrument for participation at elections.

Finally, the presidential dummy is included as exogenous instrument[13]. Table 3 reports the estimation results.

Insert Table 3 here

The first stage consists of regressing participation rates on the *Avelf index*, the compulsory voting laws dummy, the presidential regime dummy and the share of legislators elected at national districts, together with all the other expenditure determinants. In the second stage, we regress fiscal policies on the fitted participation variable and on the set of control variables. The variables which we control for are: electoral rule, per capita income, trade, log of population, age of democracy, quality of democracy, colonial history, dummy variables for federal countries, OECD countries and continents, and two demographic variables measuring the age proportion of the population.

We first regress central government spending as a percentage of GDP on the electoral rule and voter turnout. Participation positively affects total government expenditure at 1% significance level. A higher participation rate has led to an increase in the size of governments in the 1990s.

In column 2, we consider another measure of government size. The dependent variable is central

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[13]Table A in the Appendix shows that the impact of the form of government on policy outcomes is not significant once we control for voter turnout instrumented by the remaining three instruments. Therefore the form of government can be used as a valid instrument for participation.

government revenues as percentage of GDP. Turnout does affect revenues as well and its impact is positive and significant at 5% level.

Next, we investigate the role of voter turnout in explaining central government spending on social services and welfare as a percentage of GDP. The estimated coefficient is positive, as expected, and it is significant at 5% level. This result is remarkable as it supports the idea that a higher turnout rate means a larger participation of the lower end of the income distribution, hence a larger representation of people who are more likely to benefit from more redistributive policies (Lijphart, 1997).

Interestingly, the introduction of voter participation reduces both quantitatively and qualitatively the impact of the electoral rule in influencing the size of government and welfare state, with respect to the findings by PT.

Finally, we consider government surplus as the dependent variable. Keeping a specification similar to the ones implemented before, we regress budget surplus as a percentage of GDP on constitutional variables, participation rates and the set of usual controls. The electoral rule seems to play a major role in explaining budget surplus. Majoritarian systems are associated with higher budget surplus, while voter turnout does not have any effect.

In line with our priors, we conclude that voter turnout affects government size, measured both as government expenditure and revenues, and welfare state. These results prove the existence of the second link, connecting participation to fiscal variables. Forms of government affect policy outcomes entirely through voter turnout. We provide further evidence by extending the analysis over time.

1.6 Panel Data analysis

In this section we analyze the impact of voter turnout on policy outcomes over time[14]. We employ the 60-country panel data set to test the impact of the turnout rate on the four measures of policy outcomes[15]. It is not possible to instrument voter turnout as the four instruments used in the previous section are either time invariant or vary very little over time. Similarly, constitutions are not included as regressors, as they are invariant over time.

The policy outcome is regressed on voter turnout, trade openness, the log of real per capita GDP, and the two demographic variables measuring the age proportion of the population. Due to the high persistence of economic outcomes, we allow the one-period lagged policy to enter the specification. We include both time and country effects. In order to take into account geographical and colonial dummies and different persistences of the economic outcome, we interact the Latin America dummy and the British colony dummy with the lagged economic policy.

Particular concern arises regarding the quality of democracy. More than one third of the countries in the sample had autocracy spells over the whole time period considered[16]. To make sure that the variable voter turnout is not actually capturing the impact of the quality of a democracy, we include a dummy variable, *Democracy*, which takes 1 in presence of an uninterrupted democratization lasting until the end of the sample. The variable Democracy is created on the basis of the Polity IV index.[17] The results are reported in Table 4.

Insert Table 4 here

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[14]Mueller and Stratmann (2003) present a similar study in order to provide evidence for the increase in government spending and the reduction of inequality that arises in presence of high political participation.

[15]In the panel data set, the turnout series is such that whenever elections take place, either executive or legislative, the participation variable is updated up to the next following election.

[16]Argentina, Bolivia, Brazil, Chile, Dominican Republic, Ecuador, El Salvador, Fiji, Gambia, Greece, Guatemala, Honduras, Mexico, Nepal, Nicaragua, Paraguay, Peru, Philippines, Portugal, Spain, Thailand, Turkey, Uruguay.

[17]See Data Appendix.

In the first column in Table 4 the dependent variable is central government spending. Voter turnout does affect government expenditure over time. The impact is positive and highly statistically significant also when we adjust standard errors for within-cluster correlation.

In the second column, the dependent variable is central government revenues. Interestingly, it appears that over time turnout has affected revenues as well. Higher participation rates have induced not only more generous broad spending programs, but also have led to higher taxation. This result is in line with the findings in the cross-country analysis.

The same specification is applied to the third measure of policy outcomes, namely the welfare state. We expect the welfare state to be larger the higher the turnout. This is indeed the way redistribution can actually take place and in which participation can have its direct effects. The panel analysis confirms our prior. The estimated coefficient on turnout is positive and significant at 1%, also when we estimate the standard errors with clustered regressions. Higher participation rates lead to larger redistribution, hence to more generous welfare state.

Finally, in line with the cross-country analysis, turnout does not have any impact on government surplus (column 4).

These results provide evidence that electoral participation has affected government spending, revenues and welfare state also over time.

1.7 Conclusions

Departing from PT, we show that citizens' behavior plays a crucial role in understanding how institutions affect policy outcomes. We empirically identify two relationships. The first links political institutions, in terms of forms of government and electoral rules, to voter turnout. The second connects voter turnout and policy outcomes.

We investigate the first relationship by regressing average voter turnout over the 1990s on institutional and socio-economic variables. Presidential regimes are found to induce less electoral participation, once we control for all the other socio-economic covariates. Further, this finding holds when we relax the conditional mean independence assumption and we instrument political institutions.

The second part of this paper is devoted to understand whether and in which direction political participation affects policy outcomes. Both the cross-country and panel analysis provide evidence of the positive and significant impact of voter turnout on government spending, revenues and welfare state.

We conclude that the effect of forms of government on policy outcomes as found by PT is entirely mediated by voter participation in elections.

Data Appendix 1

Voter turnout: Voter turnout rate is defined as the ratio between the number of votes and the voting age population, which includes all citizens above the legal voting age. It is rescaled by multiplying it by 10. Voter turnout is calculated at National Presidential and Parliamentary elections. *Source*: Institute of Democracy and Electoral Assistance (IDEA), <www.idea.int>.

Union density: Union density is measured as the percentage of union memberships on the non-agricultural labour force. It is computed as the average of two observations: an observation in the '80s and an observation in the '90s. If only one data point exists, only that year is taken into account. *Source*: World Labour Report 1997-1998, ILO, <www.ilo.org>

Compulsory Voting laws: dummy variable, equal to 1 if voting has been made compulsory by law, regardless of the level of enforcement, 0 otherwise. *Source*: International Institute of Democracy and Electoral Assistance (IDEA), <www.idea.int>.

Legislators in National Districts: percentage of legislators elected at national districts rather than subnational districts. *Source*: Seddon et al. (2001).

Monarchy: dummy variable, equal to 1 if a country was a monarchy in the past but it is not any more. *Source*: <www.royaltymonarchy.com>

Democracy: dummy variable, equal to 1 in presence of an uninterrupted democratization lasting until the end of the sample, 0 otherwise. It is created on the basis of the Polity IV index. *Source*: Giavazzi and Tabellini (2005).

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Table 1
Voter Turnout: Summary Statistics

		Variable	Mean	St.Dev.	Min.	Max.	Obs.
1	Majoritarian System	Turnout 1960-1998	65.85	13.85	13.43	98.76	634
	Prop / Mixed System	Turnout 1960-1998	70.58	17.69	14.46	98.02	1352
2	Presidential System	Turnout 1960-1998	58.32	17.49	13.43	97.52	739
	Parliamentary System	Turnout 1960-1998	75.24	12.32	25.59	98.76	1291

Table 2
Determinants of Voter Turnout

	(2)	(3)	(4)	(5)
Dep. Var.		*Voter Turnout*		
Presidential	-2.279	-2.087	-2.255	-2.083
	(0.594)***	(0.553)***	(0.798)***	(0.738)***
Majoritarian	-0.249		-0.250	
	(0.629)		(0.458)	
Legislators in National Districts	-1.836	-2.000	1.107	1.105
	(0.713)**	(0.560)***	(0.344)***	(0.323)***
Education	0.022	0.016	0.023	0.016
	(0.018)	(0.016)	(0.015)	(0.014)
Avelf	-2.201	-2.896	-2.206	-2.897
	(1.179)*	(1.164)**	(0.989)**	(0.957)***
Compulsory	1.104	1.104	1.107	1.105
	(0.427)**	(0.409)**	(0.344)***	(0.323)***
(Log)Population	0.334	0.426	0.334	0.426
	(0.180)*	(0.162)**	(0.146)**	(0.137)***
Union Density	0.025	0.022	0.025	0.022
	(0.011)**	(0.009)**	(0.012)**	(0.011)**
Gastil Index	-0.139	-0.101	-0.137	-0.101
	(0.285)	(0.273)	(0.251)	(0.235)
Gini Index	-0.039	-0.051	-0.039	-0.051
	(0.031)	(0.029)*	(0.026)	(0.025)**
Federal	-1.176	-1.100	-1.178	-1.101
	(0.552)**	(0.456)**	(0.468)**	(0.428)**
Real GDP per capita	0.352	0.418	0.353	0.418
	(0.539)	(0.477)	(0.383)	(0.358)
District Magnitude		-1.410		-1.410
		(0.678)**		(0.535)***
Continents & Colonies	Yes	Yes	Yes	Yes
Estimation	OLS	OLS	Heckman, two stages	Heckman, two stages
Sample	1990s	1990s	1990s	1990s
Endogenous variable			Pres	Pres
Rho			0.020	0.003
Adj. R2	0.49	0.54		
Obs.	55	55	55	55

Robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%.
First stage specification of Heckman (columns 3-4) includes *EURFRAC, ENGFRAC, CON2150, CON5180, CON81, AGE, Monarchy*. Rho is the estimated correlation coefficient between the error terms in the first and second stage.

Table 3
Policy outcomes and Voter Turnout: IV estimates

	(1)	(2)	(3)	(4)
DEP. VAR.	*CENTRAL GOVERNMENT SPENDING*	*CENTRAL GOVERNMENT REVENUES*	*WELFARE STATE*	*GOVERNMENT SURPLUS*
VOTER TURNOUT	4.293 (1.526)***	4.566 (1.865)**	1.640 (0.768)**	-0.356 (0.498)
MAJORITARIAN	-2.367 (2.306)	-0.296 (2.415)	-1.598 (1.168)	2.833 (0.776)***
Continents	Yes	Yes	Yes	Yes
Colonies	Yes	Yes	Yes	Yes
Sample	1990s	1990s	1990s	1990s
Chi-square: over-id	1.669	2.145	1.641	3.431
R2	0.60	0.40	0.77	0.42
Obs.	73	70	64	67

Robust standard errors in parentheses;
* significant at 10%; ** significant at 5%; *** significant at 1%.
All regressions include *(Log)Population, OECD, Federal, Prop65, Prop1564, Trade, Real GDP per capita, Gastil Index, Age of Democracy.*
First stage specification of 2SLS includes: *Presidential, Compulsory Voting, Legislators in National Districts, Index of Ethnic-linguistic fractionalization.*
Critical value of Chi-square(3, 0.05): 7.815.

Table 4
Policy outcomes and Voter Turnout: Panel analysis

Dep. Var.	(1) CENTRAL GOVERNMENT SPENDING (CGEXP)	(2) CENTRAL GOVERNMENT REVENUES (CGREV)	(3) WELFARE STATE (SSW)	(4) GOVERNMENT SURPLUS (SPL)
Turnout	0.209 (0.080)*** (0.099)**	0.250 (0.077)*** (0.112)**	0.100 (0.040)** (0.035)***	-0.042 (0.065) (0.077)
Democracy	-0.021 (0.340) (0.391)	-0.306 (0.311) (0.310)	0.202 (0.131) (0.137)	0.336 (0.352) (0.445)
LCGEXP	0.880 (0.024)*** (0.026)***			
Laam*lcgexp	-0.104 (0.061)* (0.052)**			
Col_uk*lcgexp	-0.201 (0.049)*** (0.078)**			
LCGREV		0.808 (0.028)*** (0.038)***		
Laam_lcgrev		-0.040 (0.049) (0.049)		
Col_uk*lcgrev		-0.078 (0.079) (0.052)		
LSSW			0.839 (0.036)*** (0.027)***	
Laam*lssw			-0.084 (0.082) (0.088)	
Col_uk*lssw			-0.176 (0.106)* (0.117)	
LSPL				0.749 (0.037)*** (0.038)***
Laam*lspl				-0.128 (0.095) (0.067)*
Col_uk*lspl				0.001 (0.087) (0.058)
Sample period	1960-1998	1960-1998	1960-1998	1960-1998
Adj.R2	0.96	0.97	0.99	0.73
Obs. (countries)	1467 (53)	1378 (52)	949 (53)	1424 (53)

Standard errors in parentheses (above: robust OLS; below: clustered).
* significant at 10%; ** significant at 5%; *** significant at 1%. All regressions include *TRADE, REAL GDP PER CAPITA, PROP1564, PROP65*, country and year fixed effects.

Appendix 1

Table A
Policy outcomes and Voter Turnout: IV estimates
Presidential regime as independent variable

	(1)	(2)	(3)	(4)
DEP. VAR.	CENTRAL GOVERNMENT SPENDING	CENTRAL GOVERNMENT REVENUES	WELFARE STATE	GOVERNMENT SURPLUS
VOTER TURNOUT	4.257 (2.191)*	4.389 (2.613)*	2.091 (1.195)*	-1.038 (0.665)
MAJORITARIAN	-2.405 (2.891)	-0.465 (3.100)	-1.189 (1.547)	2.264 (0.978)**
PRESIDENTIAL	-0.114 (4.392)	-0.551 (5.880)	1.457 (2.358)	-2.096 (1.417)
Continents	Yes	Yes	Yes	Yes
Colonies	Yes	Yes	Yes	Yes
Sample	1990s	1990s	1990s	199os
Chi-square: over-id	1.642	2.190	0.75	5.60
R2	0.60	0.42	0.73	0.45
Obs.	73	70	64	67

Robust standard errors in parentheses;
* significant at 10%; ** significant at 5%; *** significant at 1%.
All regressions include *(Log)Population, OECD, Federal, Prop65, Prop1564, Trade, Real GDP per capita, Gastil Index, Age of Democracy.*
First stage specification of 2SLS includes: *Compulsory Voting, Legislators in National Districts, Index of Ethnic-linguistic fractionalization.*
Critical value of Chi-square(2, 0.05): 5.99.

Chapter 2

Differentiated Products and Evasion of Import Tariffs

Beata S. Javorcik and Gaia Narciso

2.1 Introduction

As many developing and transition countries rely on import tariffs as an important source of revenue,[1] evasion of customs duties has attracted a lot of attention from policy makers. For instance, a report released by the state's budgetary watchdog, the Audit Chamber, found that the Russian customs service was plagued by corruption which was costing the state billions of dollars annually (Baumgartner, 2001). An investigation by the Supreme Board of Inspection (NIK) in Poland suggested that importers used various methods to artificially lower the value of imported goods, including fake invoices and double invoicing (Polish News Bulletin, 2000). Revenue loss aside, there are other undesirable effects of tariff evasion. It boosts the profitability of well-connected firms at the expense of honest producers and importers. It may hinder the accession process to the World Trade Organization and hurt the image of the country as an attractive location for foreign direct investment.

The purpose of this study is to enhance our understanding of tariff evasion—concealment of dutiable imports by private parties (individuals or private firms). It aims to do so in three ways. First, it documents the existence of tariff evasion in transition countries by demonstrating that in 8 out of 10 Eastern European economies, the discrepancy between the export figures reported by Germany and the import data

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[1] Customs and other import duties accounted for 62% of tax revenue in the Maldives, 55% in Lesotho, 50% in Madagascar, 42% in Bangladesh, 16% in Tajikistan and 10% in Ukraine (2004 figures from the World Bank's *World Development Indicators*).

recorded by the importing economy is systematically related to the tariff level.[2] In this way, it shows the generality of the pattern found for China by Fisman and Wei (2004). It also improves on Fisman and Wei's work by relying on panel data rather than mostly cross-sectional information. Second, it finds that tariff evasion is more prevalent for differentiated products, as defined by Rauch (1999). This result is intuitive as it is more difficult to accurately assess the price of differentiated products, which means that honest customs officers find it more difficult to detect an invoice stating an incorrect price and corrupt customs officers have a plausible explanation for why they did not detect the problem with the invoice.[3] Third, the study shows that tariff evasion in the case of differentiated product tends to take place by misrepresenting the price of imported goods rather than by undercounting physical quantities or misclassifying products.

Eastern Europe is a suitable environment for this study for three reasons. First, the weakness of its institutions, including the customs service, makes it prone to tariff evasion. For instance, in a 1999 survey 51% of firms in Romania, 45% in Lithuania and 44% in Ukraine believed that there was a need to make "additional payments" when

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[2] Note that while some discrepancy in trade data may be due to lower quality of data recording in Eastern European countries, in the absence of evasion such discrepancy would not be systematically related to the tariff rate.

[3] An investigation into customs import control launched by the Polish Supreme Board of Inspection showed that the value of imported goods, as included in customs declarations, was often "ridiculously low," which went unnoticed by customs officers. Importers used various methods to artificially lower the value of imported goods, including fake invoices issued by both foreign suppliers and the importers or double invoicing. In most such cases, according to the NIK report, customs officers either did not want or were unable to question the evident misrepresentation of prices. The verification of customs value of imported goods during customs clearance procedures was in most cases carried out according to the sole discretion of the customs officers on duty (Polish News Bulletin, 2000).

dealing with customs.[4] Second, trade liberalization taking place during the period under study gives us a significant variation in tariff rates across time and across products. As illustrated in Table A2.1 in Appendix 2.1, during the period under study the average tariff rate in Poland declined from 11.8% to 1.9%. The corresponding figures for Hungary were 12.9% and 5.6%, while for Russia the change was from 12.1% to 10.4%. Third, as all but two of the countries in the sample were preparing for their accession to the European Union during the time under study, the changes in their tariff rates were determined by the pre-accession agreements (European Agreements) and thus are not subject to endogeneity problems.

Taking Fisman and Wei's work as our starting point, we analyze the sensitivity of tariff evasion to tariff rates and identify the type of products which are subject to greater evasion. We use data on ten Eastern European countries over the time period 1992-2003. We measure the trade gap as the difference between the value of exports from Germany to each country in the sample as reported by Germany and the value of imports from Germany as reported by each importing country. Considering the same trading partner for all importers in the sample ensures that the export data are measured consistently. We choose to focus on German exports, as Germany was a major trading partner of all countries in the sample accounting for 31% of total imports in the Czech Republic, a quarter of imports in both Hungary and Poland and 19% in Slovenia. The lowest share of German imports was registered in Ukraine where they accounted for

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[4] The data come from the Business Environment and Enterprise Performance Survey (BEEPS), conducted jointly by the World Bank and the European Bank for Reconstruction and Development. The statistics pertain to the percentage of firms which answered "always," "mostly," "frequently," "sometimes" or "seldom" to the question "How frequently do firms in your line of business have to pay some irregular "additional payments" to deal with customs and imports?"

only 9% of the total (see Table A2.2 in Appendix 2.1). The trade figures come from the United Nations' COMTRADE database and are available at the product level (6-digit category in the Harmonized System (HS) classification HS1988/92). Depending on the country, our data set includes information on between 1,433 and 2,785 products for years between 1992 and 2003. The tariff data, applied by each importing country to imports from Germany, measured also at the 6-digit HS level, have been obtained from the UNCTAD's TRAINS database.

We find a positive and significant relationship between the tariff level and the trade gap. This relationship holds for 8 out of 10 countries as well as for the pooled sample. It is robust to including 6-digit product dummies and country-year fixed effects. The responsiveness of the trade gap to the tariff level is found to be the highest for Ukraine and the Russian Federation, both of which appear to have a high level of corruption in the customs service according to the BEEPS survey mentioned earlier. It is also interesting to note that no statistically significant relationship is found for Slovenia which is the country with the lowest incidence of customs corruption as reported in BEEPS.

In addition to testing the relationship between tariff levels and evasion, we ask what kind of products are more likely to be subject to evasion. We consider Rauch's (1999) definition of differentiated products and argue that for such products it may be easier to conceal their true value. We confirm our hypothesis by showing that the trade gap is more responsive to the tariff level in the case of differentiated goods than in the case of homogenous products. This result holds for both a liberal and a conservative

definition of differentiated products and is robust to several specifications. The magnitude of the effect is economically meaningful. A one-percentage-point increase in the tariff rate is associated with a 0.6% increase in trade gap in the case of homogenous products and a 2.1% increase in the case of differentiated products.

Finally, we consider three channels through which tariff evasion may take place. These are: (i) misrepresenting the price of imported products; (ii) undercounting physical quantities of imported products, and (iii) misclassification of high tariff products as a lower tariff variety. We find strong evidence of price misrepresentation in the case of differentiated products. More specifically, our results indicate that the gap in the unit values of exports reported by Germany and imports reported by the destination country (which captures reporting a lower than actual price of imports) is positively correlated with the tariff level. This effect is positive and statistically significant in the case of differentiated products, but not for all other goods. We find little evidence of undercounting of physical quantities. Neither do we find evidence of product misclassification when we consider misclassification within the same 4-digit HS sector. We conclude that the difficulties associated with assessing the price of differentiated products make them particularly prone to tariff evasion.

Our study is related to the literature documenting evasion of import duties in developing countries. In their 1970 volume, Little, Scitovsky and Scott pointed out that evasion of import duties through smuggling was a major problem in Mexico, Argentina and the Philippines. Bhagwati (1964) discussed the prevalence of under-invoicing as a method of tariff evasion. The type of corruption that involved import duty evasion in

which briber and bribee collude to rob the public was referred by Shleifer and Vishny (1993) as "corruption with theft." Pritchett and Sethi (1994) examined the data from three developing countries (Jamaica, Kenya and Pakistan) and found that collected and official tariff rates are only weakly related, the variance of the collected rate increases strongly with the level of the official rate and the collected rate increases much less than one-for-one with increases in the official rate. The relationship between evasion and tariff rates was analyzed by Fisman and Wei (2004) who found that import duty evasion rises with the tariff rate. Comparing the values of imports from Hong Kong as reported by China with the Hong Kong data on its exports to China at the product level for 1998 they demonstrated that a one-percentage-point increase in the tariff rate was on average associated with a three percent increase in underreporting.[5]

Our study also contributes to the emerging literature on differentiated products. In his seminal work, Rauch (1999) classified goods into three categories. He defined homogeneous goods as products whose price is set on organized exchanges. Goods which are not traded on organized exchanges, but possess a benchmark price, were defined as reference priced. Finally, products whose price is not set on organized exchanges and which lack a reference price because of their intrinsic features were labeled as differentiated. Rauch argued that search costs tend to be higher for differentiated products relative to homogeneous goods and showed that colonial ties and common

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[5] Our work is also related to a more general literature on tax evasion. While many theoretical models have analyzed the impact of tax rates on evasion, Slemrod and Yitzhaki (2000) concluded in their survey paper that theoretical findings are not clear-cut, as they strongly depend on modeling assumptions. Contrasting results are provided by empirical studies as well. Clotfelter (1983) and Feinstein (1991), who study the impact of tax rates on tax evasion by using the U.S. Taxpayers Compliance Measurement Program data, ended up drawing opposite conclusions. Cloetfleter found a positive relationship, while Feinstein, who employed a subset of the dataset, provided evidence of a negative relationship.

language are more relevant for trade in differentiated products than trade in homogeneous goods. In subsequent work, Rauch and Trinidade (2002) found that the positive impact of ethnic Chinese networks on bilateral trade is greater for differentiated products relative to homogeneous ones. In line with this result, Rauch and Casella (2003) showed that the higher the degree of product differentiation the larger the impact of international ties between wholesalers on bilateral trade. Fink, Mattoo and Neaugu (2002) provided evidence that the effect of communication costs on trade is larger for differentiated products. Feenstra, Markusen and Rose (2001) showed that home market effects are more pronounced for differentiated than for homogenous products, while Evans (2003) found that the higher the degree of product differentiation, the smaller the border effects. In a recent paper, Besedes and Prusa (2006) showed that transactions in differentiated goods tend to start involving smaller values than transactions of homogeneous goods and that trade relationships tend to be longer for differentiated products than for homogeneous ones.

While our study does not explicitly analyze the effects of customs reform, its results suggest that a system which gives customs officials discretion and does not involve effective audits or secondary inspections is likely to lead to tariff evasion. Corrupt behavior aside, the ability of the customs official to evaluate invoice prices may be greatly enhanced by computerization and international agreements that allow them to obtain verification from foreign institutions about the validity of documents

presented by importers. Our results also provide evidence in favor of having a uniform tariff structure which would dampen the incentives to misclassify imported products.[6]

This study is structured as follows. Section 2.2 describes the data. Section 2.3 explores the relationship between tariff rates and evasion. Section 2.4 presents the empirical results on tariff evasion for differentiated products, and Section 2.5 examines the channels through which such evasion takes place. Section 2.6 concludes.

2.2 Data

Our first data source is the World Bank's World Integrated Trade Solution (WITS) database. This database contains information on MFN and preferential tariff rates specific to pairs of countries and years, derived from the UNCTAD's Trade Analysis and Information System (TRAINS). The tariff information is available at the 6-digit Harmonized System level. We focus on 8 Eastern European countries acceding to the European Union (Bulgaria, Czech Republic, Hungary, Latvia, Lithuania, Poland, Romania and Slovenia) as well as on the Russian Federation and Ukraine.[7] As most of these countries have preferential trade agreements with the European Union, we use information on applied tariffs.

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[6] The theoretical arguments in favor of a uniform tariff structure are usually based on political economy considerations and incentives for tariff evasion (see Panagariya and Rodrik 1993; Tarr 2002; Anderson and Neary 2006).

[7] Data constraints prevent us from including other post-Soviet transition countries in the sample. Unfortunately, WITS does not include ad valorem equivalents of specific tariffs which may be prevalent in the countries not acceding to the EU. However, not controlling for specific tariffs is likely to work against us finding a relationship between trade evasion and tariff level. As specific tariffs are more likely to be imposed on agricultural products, in our robustness checks we will exclude these products from the sample.

As illustrated in Table 2.1, tariff rates differ substantially across the countries considered. Lithuania has the lowest average tariff rate of 3.64%, as a large percentage of products are subject to zero tariff, while Russian Federation shows the highest average tariff rate of 12.58%. Slovenia is the country with the lowest maximum tariff rate, around 49%. A large fraction of imports is not taxed in Poland, although the variance in Polish tariffs is very high, due to the high tariff rates applied to tobacco imports (up to 295%). It is relevant to note that all countries in the sample undertook trade liberalization during the time period under study and their tariff rates decreased significantly over time (see Table A2.1 in Appendix 2.1).

Our second data source is the United Nations' COMTRADE database which includes information on trade flows, also at the 6-digit level. The data on tariffs and trade flows are available for the period 1992-2003, though the coverage differs by country (see Appendix 2.1 for more details). Using COMTRADE data we calculate the trade gap, which is defined as the log difference between the value of exports from Germany to each country in the sample as reported by Germany and the value of imports from Germany as reported by each partner country.

As can be seen in the lower panel of Table 2.1, there are significant differences in the trade gap across countries. A discrepancy between the value of exports recorded by the exporting country and the value of imports recorded by the importer is to be expected. The first reason is that export prices are expressed in f.o.b. terms while imports are recorded including the cost of insurance and freight (c.i.f.). The second reason is that countries tend to monitor imports more carefully than exports. Thus, in

the absence of tariff evasion one would expect the discrepancy to be negative. And indeed the reported value of imports exceeds that of exports in 6 out of 10 countries. The largest difference is observed in Latvia, Russia and Ukraine, which are located farther away from Germany than Poland, the Czech Republic or Hungary and thus their imports may need to incur higher transport costs. However, as illustrated in Table 2.1, in 4 out of 10 countries we observe a positive gap which means that on average Germany recorded higher exports of a particular product line than the imports recorded by a transition country. The extent of underreporting (i.e., the positive gap) ranges from 6% in the case of Hungary to 12% in Bulgaria, 14% in the Czech Republic and 16% in Slovenia.[8]

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[8] Note that these percentages are calculated as the exponent of the values reported in Table 2.1.

Table 2.1: Tariff rates and trade gap by country.

| Country | Tariff rates | | | | |
	Mean	Standard deviation	Minimum	Maximum	Obs.
Bulgaria	3.96	7.18	0	68	3,453
Czech Republic	4.26	6.44	0	168	16,187
Hungary	8.50	11.72	0	150	22,725
Latvia	4.51	7.65	0	88	13,122
Lithuania	3.64	7.45	0	70	10,284
Poland	5.19	13.79	0	295	17,817
Romania	7.23	9.20	0	144	9,874
Russian Federation	12.58	7.80	0	100	16,575
Slovenia	6.78	7.23	0	49.2	10,546
Ukraine	8.85	8.98	0	70	11,825

| Country | Trade gap | | | | |
	Mean	Standard deviation	Minimum	Maximum	Obs.
Bulgaria	0.11	1.20	-6.24	7.58	3,453
Czech Republic	0.13	1.10	-7.28	8.04	16,187
Hungary	0.06	1.31	-7.39	8.23	22,725
Latvia	-5.96	2.72	-14.65	6.50	13,122
Lithuania	-0.08	1.23	-7.14	8.47	10,284
Poland	-0.41	2.05	-10.40	6.47	17,817
Romania	-0.01	1.30	-7.40	7.52	9,874
Russian Federation	-5.45	2.98	-15.51	9.41	16,575
Slovenia	0.15	1.33	-7.17	8.90	10,546
Ukraine	-2.88	3.85	-14.05	7.56	11,825

Notes: trade gap = $\ln(\text{exports reported by Germany})_{pt} - \ln(\text{imports reported by the importing country})_{pt}$ where p stands for a 6-digit HS product and t for year.

2.3. Tariff rates and Trade gap

It is reasonable to expect that the incentive of importers to evade import duties increases with the tariff rate. And indeed Fisman and Wei (2004) find a positive relationship between the trade gap and the tariff rate in China. But does this relationship hold in other countries or are Chinese importers unique in their ability to

conceal imports? As many transition countries had significantly lower tariffs than the average rate of 17.6% imposed by China on imports from Hong Kong in 1998, the year considered by Fisman and Wei, does the relationship between evasion and tariff level hold in transition economies?

Table 2.2: Trade gap by tariff rate.

Country	Trade Gap		
	Tariff below median	Tariff above median	Difference
	(1)	(2)	(2) - (1)
Bulgaria	0.00 (1751 products)	0.23 (1702 products)	0.23
Czech Republic	0.09 (9874 products)	0.19 (6313 products)	0.10
Hungary	-0.03 (11663 products)	0.15 (11062 products)	0.18
Latvia	-6.05 (8126 products)	-5.82 (4996 products)	0.24
Lithuania	-0.12 (7510 products)	0.03 (2774 products)	0.15
Poland	-0.25 (12888 products)	-0.80 (4929 products)	-0.55
Romania	-0.08 (6002 products)	0.09 (3872 products)	0.17
Russian Federation	-5.60 (9815 products)	-5.24 (6760 products)	0.36
Slovenia	0.14 (7829 products)	0.16 (2717 products)	0.01
Ukraine	-3.16 (6996 products)	-2.48 (4829 products)	0.68

Notes: trade gap = $\ln(\text{exports reported by Germany})_{pt} - \ln(\text{imports reported by the importing country})_{pt}$ where p stands for a 6-digit HS product and t for year. The median tariff values are calculated for each country and each year.

To shed some light on these questions, we start by presenting simple summary statistics of the trade gap for each country in our sample. In each country, we split the products into those with the tariff above the median rate and those with the tariff below the median (Table 2.2). In all countries, except for Poland, the trade gap is higher for products whose tariffs are above the median. For instance, while in Bulgaria there is no trade gap for products with low protection, in the case of goods with above median tariff rate the discrepancy increases to 26%. In Hungary, the value of exports of products with a below median tariff rate is 3% lower than the value of imports, but in the case of above median tariff rates, exports are underreported by 16%. These summary statistics are consistent with the idea that the gap value is a proxy for tariff evasion. We obtain similar results when we split the sample between products with the top 25% tariff rates versus the rest. The puzzling result regarding Poland may be explained by the high percentage of products subject to zero tariffs. The percentage of products exempt from tariffs increased from 12% in 1998 to 89% in 1999 and remained well above 90% in the following years.

Next we estimate a simple model of the trade gap as a function of the tariff rate and year fixed effects. We do so for each country c in the sample separately.

$$\ln Export\_value_{Germany,cpt} - \ln Im\,port\_value_{cpt} = trade\_gap_{cpt} = \alpha + \beta\,tariff_{cpt} + \alpha_t + \varepsilon_{cpt}$$

where p stands for a 6-digit product and t for year. Our prior is that if the gap value is a good proxy for tariff evasion then the estimated coefficient of the tariff rate should be positive and significant.

The results, reported in Table 2.3, are consistent with the summary statistics presented earlier. The estimated coefficient on the tariff rate is positive and significant at the 1% level for all the countries but Slovenia and Poland. The higher the tariff rate, the lower the value of imports reported by the importing country relative to the reported exports (i.e, the higher the trade gap). A one-percentage-point increase in the tariff level is associated with a 4.4% increase in the trade gap in Ukraine, 3.2% increase in the Russian Federation and 0.8% increase in Hungary. These results are in line with Fisman and Wei's study which finds a 3% increase.[9]

It is interesting to note that Ukraine, the country with the highest estimated elasticity, has the second highest prevalence of corruption in customs as reported in the BEEPS survey. Slovenia, a country for which there is no statistically significant relationship, is ranked as the cleanest country in terms of corruption in customs according to BEEPS. See Appendix 2.2 for more details. The insignificant coefficient found in the case of Poland is likely to be driven by the high percentage of products which are subject to zero tariff.

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[9] Note that these calculations do not take into account the direct effect an increase in a tariff rate may have on the volume of imports.

Table 2.3: Trade gap and tariff rate by country.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Bulgaria	Czech Republic	Hungary	Latvia	Lithuania	Poland	Romania	Russia	Slovenia	Ukraine
	Trade Gap									
Tariff	0.009	0.015	0.008	0.022	0.013	0.000	0.01	0.032	-0.004	0.044
	(0.003)***	(0.003)***	(0.001)***	(0.004)***	(0.003)***	(0.001)	(0.003)***	(0.004)***	(0.004)	(0.005)***
Observations	3453	16187	22725	13122	10284	17817	9874	16575	10546	11825
Adj. R-squared	0.004	0.009	0.007	0.005	0.010	0.674	0.005	0.011	0.0001	0.011

All models include year fixed effect and a constant. Standard errors, clustered on 6-digit products, are listed in parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%.

2.4. Trade gap, tariff rates and differentiated products

As mentioned earlier, differentiated products may lend themselves more readily to tariff evasion than homogenous goods as their price depends on many attributes some of which may not be easily verifiable by a person unfamiliar with the product. Therefore, in the case of differentiated products it is more difficult for honest customs officers to detect an invoice stating an incorrect price and corrupt customs officers have a plausible explanation for why they failed to detect the problem with the invoice.

In our analysis, we use the classification of differentiated products developed by Rauch (1999). Rauch defined differentiated products as those not having a reference price or those whose price is not quoted on organized exchanges. Wheat and diamonds are classified as homogeneous goods, while coats and jackets are considered to be differentiated products. Rauch suggested two definitions, a conservative and a liberal one, in order to account for the ambiguities arising in the classification. The conservative definition minimizes the number of commodities that are classified as homogeneous goods, while the liberal definition maximizes this number. We employ

both classifications, although the results do not differ substantially between the two. Rauch's definitions are based on the 4-digit SITC Rev. 2 classification, and we use the concordance provided by WITS to make it compatible with the 6-digit HS 1988/92 classification used in our data set.

Table 2.4, which reports the average trade gap for differentiated and homogeneous goods, confirms our prior about differentiated products lending themselves more readily to tariff evasion. For all countries but Latvia and the Czech Republic, the trade gap is larger for differentiated products than for homogenous goods. For instance in Bulgaria, there is hardly any discrepancy for homogenous products (-2.6% in the case of the conservative and -1.6% in the case of the liberal definition), but a significant trade gap is found for differentiated products (16.6% and 17.6% for the conservative and liberal definition, respectively). In the case of Hungary, the gap increases from 3% for homogenous goods to 6.7% for differentiated products when the conservative definition is used. The corresponding figures for the liberal definition are 2.2 and 7.4%.

Table 2.4: Average tariff rates and trade gap by type of product.

	Tariff rate			
	Homogeneous	Differentiated	Homogenous	Differentiated
	Conservative		Liberal	
Bulgaria	6.352	3.277	5.592	3.359
Czech Republic	4.953	3.965	4.726	4.012
Hungary	10.753	7.725	10.254	7.736
Latvia	5.256	4.331	4.938	4.375
Lithuania	4.381	3.447	3.603	3.651
Poland	8.671	4.132	7.811	4.132
Romania	9.858	6.372	8.937	6.513
Russian Federation	9.222	13.717	10.120	13.655
Slovenia	5.674	7.168	5.575	7.320
Ukraine	7.878	9.096	7.763	9.211

	Trade Gap			
	Homogeneous	Differentiated	Homogenous	Differentiated
	Conservative		Liberal	
Bulgaria	-0.026	0.154	-0.016	0.162
Czech Republic	0.141	0.125	0.115	0.138
Hungary	0.030	0.065	0.022	0.071
Latvia	-5.906	-5.978	-5.937	-5.973
Lithuania	-0.222	-0.043	-0.210	-0.036
Poland	-0.466	-0.388	-0.473	-0.379
Romania	-0.060	0.005	-0.076	0.016
Russian Federation	-5.712	-5.366	-5.717	-5.338
Slovenia	0.114	0.157	0.108	0.163
Ukraine	-2.949	-2.869	-2.951	-2.863

Notes: trade gap = ln(exports reported by Germany)$_{pt}$ – ln(imports reported by the importing country)$_{pt}$ where p stands for a 6-digit HS product and t for year.

Note that the upper panel in Table 2.4 indicates that for 7 out of 10 countries in the sample, the tariff rate on differentiated products is lower than the tariff rate on homogenous goods. This allows us to have some confidence that the reported differences in trade gap between differentiated and homogenous products are likely to be driven by evasion rather than differences in tariff rates.

To test whether differentiated products are more likely to be subject to underreporting, we pool all countries in the sample and regress the trade gap on the tariff rate, the differentiated product dummy and the interaction between the tariff rate and the differentiated product dummy. Our specification is as follows:

$$trade\_gap_{cpt} = \beta_0 + \beta_1 tariff_{cpt} + \beta_2 differentiated\_product_p +$$
$$+ \beta_3 tariff_{cpt} * differentiated\_product_p + \alpha_{ct} + \varepsilon_{cpt}$$

where $trade\_gap_{cpt}$ is the gap value for the country c importing product p at time t; $tariff_{cpt}$ is the tariff rate imposed by country c on imports of product p from Germany at time t, $differentiated\_product_p$ is the differentiated product dummy based on Rauch's conservative or liberal definition, depending on the specification. To control for importing country-specific changes that may occur in a particular time period, such as a reform of the customs service or a decline in the incidence of corruption, we include country-year fixed effects. Thus to the extent that the introduction of computerization or an increase of salaries in the customs service affects tariff evasion across the board, it will be captured by these fixed effects. Finally, we cluster standard errors at the 6-digit product level.

In line with the evidence shown in the previous section, we expect the estimated coefficient for the tariff rate to be positive and significant. The higher the tariff rate, the higher the incentive for tax evasion, and the higher the expected gap. We are, however, primarily interested in the *interaction* between the tariff rate and the differentiated product dummy. Our prior is that the effect of the tax rate is higher for differentiated products relative to homogenous ones. This is because differentiated product may make it easier for importers or corrupt customs officials to misrepresent the price of the

imports. Classifying homogenous goods is relatively straightforward and there is little variation in prices, thus misrepresenting the price could easily be detected. With differentiated products the wide range of potential uses, product characteristics and quality levels make the assessment of price more difficult, thus creating more room for tax evasion. Therefore, we expect the estimated coefficient β_3 to be positive.

The results, reported in Table 2.5, support our hypothesis that the positive relationship between the tariff rate and trade evasion is stronger for differentiated products. In the first column of Table 2.5, we confirm that the positive correlation between tariff levels and the trade gap holds in the pooled sample. In the second column, we employ the conservative definition of differentiated products and find that the estimated coefficient on the interaction term is positive and significant at the 1% level. This finding confirms our prior that the response of tariff evasion to the tariff rate is higher for differentiated products. Note that the differentiated product dummy itself is not significant suggesting that differentiated products differ in terms of the trade gap response to the tariff level but not in terms of the trade gap in general. As in the country regressions, the tariff coefficient remains positive and statistically significant, indicating that an increase in the tariff rate leads to an increase in the gap value, and hence to an increase in the evasion and underreporting of imports. The results hold when we consider the liberal definition of differentiated products (see column 3). Again, the responsiveness of evasion to an increase in the tariff rate is greater for differentiated products. The estimated coefficient of the interaction term is positive and statistically significant at the 1% level. The magnitude of the effect is economically meaningful. A

one-percentage-point increase in the tariff rate is associated with a 0.6% increase in evasion in the case of homogenous products and a 2.1% increase in the case of differentiated products[10].

A potential concern is that our results may be driven by agricultural products which are homogenous in nature and may be subject to non-tariff barriers. To check this possibility, in columns 4-6 we replicate the previous specifications excluding agricultural products (HS codes 010111 to 530599). The same results hold: the estimated coefficient of the tariff rate is still positive and statistically significant. Similarly, the interaction term between the tariff rate and the differentiated product dummy, both in the liberal and conservative definition, has a positive and highly significant impact on the trade gap.

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[10] These magnitudes refer to the specification in column 2.

Table 2.5: Trade, tariff rates and differentiated products.

	(1)	(2)	(3)	(4)	(5)	(6)
	Trade Gap					
Tariff	0.012	0.006	0.007	0.012	0.005	0.006
	(0.001)***	(0.001)***	(0.001)***	(0.001)***	(0.001)***	(0.001)***
Tariff*Conservative dummy		0.015			0.016	
		(0.002)***			(0.002)***	
Tariff*Liberal dummy			0.014			0.015
			(0.002)***			(0.002)***
Conservative dummy		-0.009			0.009	
		(0.03)			(0.032)	
Liberal dummy			0.015			0.032
			(0.029)			(0.03)
Agricultural products	Included	Included	Included	Excluded	Excluded	Excluded
Observations	132408	132408	132408	127893	127893	127893
Adjusted R-squared	0.59	0.59	0.59	0.59	0.59	0.59

All regressions include country-year fixed effects and a constant. Standard errors, clustered on 6-digit product, are listed in parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%.

As a robustness check, we introduce country-year fixed effects together with 6-digit product fixed effects thus controlling for country-specific changes in the performance of the customs service as well as unobservable product characteristics (see Table 2.6). The estimated coefficient of the interaction term is still positive and statistically significant at the 1% level in all specifications, both with and without agricultural products and both for the liberal and the conservative definition of differentiated products. The estimated elasticity of the trade gap with respect to the tariff rate is positive and significant in 4 out of 6 specifications.

Table 2.6: Trade gap, tariff rates and differentiated products. Controlling for country-year fixed effects and 6-digit product fixed effects.

	(1)	(2)	(3)	(4)	(5)	(6)
			Trade Gap			
Tariff	0.008	0.002	0.003	0.007	0.001	0.002
	(0.001)***	(0.001)**	(0.001)***	(0.001)***	(0.001)	(0.001)
Tariff*Conservative Dummy		0.013			0.014	
		(0.002)***			(0.002)***	
Tariff*Liberal Dummy			0.012			0.013
			(0.002)***			(0.002)***
Agricultural products	Included	Included	Included	Excluded	Excluded	Excluded
Observations	132408	132408	132408	127893	127893	127893
Adjusted R-squared	0.6	0.6	0.6	0.6	0.6	0.6

All regressions include country-year and 6-digit product fixed effects as well as a constant. Robust standard errors are listed in parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%.

As another robustness check, we estimate a model in first differences. This will allow us to eliminate the time-invariant effects specific to a particular product imported by a particular country. To control for importing country-specific time trends, e.g., an improvement in the quality of the customs services over time, we include importing-country fixed effects. Our estimating equation takes the following form:

$$\Delta trade\_gap_{cpt} = \gamma_0 + \gamma_1 \Delta tariff_{cpt} + \gamma_2 \Delta tariff_{cpt} * differentiated\_dummy_p + \lambda_c + \varepsilon_{cpt}$$

Again, the estimation results confirm our earlier findings (see Table 2.7). The interaction term is positive and statistically significant for both the liberal and the conservative definition of differentiated products. The coefficient on tariff level, however, loses its significance.

Table 2.7: Trade gap, tariff rates and differentiated products. Specification in first differences.

	(1)	(2)	(3)	(4)	(5)	(6)
	Δ Trade Gap					
Δ Tariff	0.001	-0.005	-0.004	0.002	-0.004	-0.002
	(0.002)	(0.005)	(0.004)	(0.002)	(0.005)	(0.004)
Δ Tariff*Conservative dummy		0.012			0.010	
		(0.005)**			(0.005)*	
Δ Tariff*Liberal dummy			0.010			0.008
			(0.005)**			(0.005)*
Agriculture	Included	Included	Included	Excluded	Excluded	Excluded
Observations	102989	102989	102989	99883	99883	99883
Adjusted R-squared	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003

All regressions include country fixed effects and a constant. Robust standard errors are listed in parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%.

2.5. Channels of tariff evasion

In the light of the above findings, it is natural to ask how tariff evasion takes place. There are three potential channels through which importers may attempt to avoid or minimize the tariff payment: (i) misrepresenting the price of imported products; (ii) undercounting physical quantities of imported products, and (iii) misclassification of high tariff products as a lower tariff variety. In this section, we explore each of these evasion methods.

2.5.1 Misrepresenting the price of imported products

To examine the prevalence of misrepresenting the price of imports, we calculate the difference between the unit value of exports reported by Germany and the unit value of imports recorded by the importing country:

$$value\_gap_{cpt} = \ln(\frac{Export\_value_{Germany,cpt}}{Export\_quantity_{Germany,cpt}}) - \ln(\frac{Im\,port\_value_{cpt}}{Im\,port\_quantity_{cpt}})$$

As before, the gap is calculated at the level of 6-digit HS product for each importing country and each year.

Table 2.8: Unit value gap. Homogenous versus differentiated products.

	Mean	St. Dev	Homogeneous Conservative	Differentiated	Homogenous Liberal	Differentiated
Bulgaria	0.29	1.06	-0.146	0.417	-0.120	0.445
Czech Republic	0.21	0.80	0.021	0.288	0.036	0.301
Hungary	0.18	0.84	0.006	0.246	0.013	0.260
Latvia	-5.83	2.44	-5.920	-5.803	-5.920	-5.795
Lithuania	0.23	0.91	-0.027	0.312	0.004	0.323
Poland	-0.37	1.97	-0.495	-0.329	-0.457	-0.332
Romania	0.33	1.05	0.018	0.448	0.034	0.472
Russian Federation	-5.25	2.72	-5.524	-5.160	-5.524	-5.133
Slovenia	0.14	0.86	-0.146	0.235	-0.129	0.256
Ukraine	-2.78	3.64	-2.995	-2.730	-2.992	-2.714

Table 2.9: Unit value gap by tariff rate.

Country	Unit Value Gap		
	Tariff below median (1)	Tariff above median (2)	Difference (2) – (1)
Bulgaria	0.15 (1713 products)	0.43 (1700 products)	0.27
Czech Republic	0.18 (9283 products)	0.25 (6065 products)	0.07
Hungary	0.14 (11129 products)	0.23 (10720 products)	0.09
Latvia	-5.90 (7940 products)	-5.70 (4918 products)	0.20
Lithuania	0.19 (6639 products)	0.35 (2438 products)	0.15
Poland	-0.20 (12636 products)	-0.80 (4873 products)	-0.60
Romania	0.25 (5114 products)	0.46 (3312 products)	0.20
Russian Federation	-5.29 (9625 products)	-5.20 (6495 products)	0.10
Slovenia	0.08 (7642 products)	0.30 (2655 products)	0.22
Ukraine	-3.01 (6820 products)	-2.45 (4711 products)	0.56

In the absence of evasion, we would expect the unit value gap to be negative, as import statistics include the cost of freight and insurance, neither of which is captured by the export data. However, as indicated in Table 2.8, in 6 out of 10 countries the average unit value gap is positive. It is even more striking that in all countries, the average unit value gap is larger for differentiated products. This is true for both the conservative and the liberal definition of differentiated products. Further, Table 2.9

suggests that in all but one country (Poland) the unit value gap is larger for products with the above median tariff rate.

To test this relationship more formally, we regress the unit value gap on the tariff rate, differentiated product dummy and the interaction between the two variables. To save space, we present only the specification estimated with country-year and product fixed effects and the specification in first differences. We restrict our attention to the sample excluding agricultural products.[11]

Table 2.10: Unit value gap.

	(1)	(2)	(3)	(4)	(5)	(6)
	Levels			First differences		
Tariff	0.000	-0.001	-0.001	0.003	-0.004	-0.003
	(0.001)	(0.001)	(0.001)*	(0.002)	(0.005)	(0.004)
Tariff*Conservative dummy		0.002			0.012	
		(0.001)*			(0.005)**	
Tariff*liberal dummy			0.003			0.010
			(0.001)**			(0.005)**
Country-year fixed effects	Yes	Yes	Yes	No	No	No
Product fixed effects	Yes	Yes	Yes	No	No	No
Country fixed effects	No	No	No	Yes	Yes	Yes
Agricultural products	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded
Observations	121963	121963	121963	94658	94658	94658
Adjusted R-squared	0.66	0.66	0.66	0.0001	0.0002	0.0002

All regressions include a constant. Robust standard errors are listed in parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%.

As evident in Table 2.10, we find no evidence of price misrepresentation (i.e., reporting unit values of imports as being lower than what they really are) being responsive to the tariff rate in general. On the contrary, in one case we find a negative

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[11] Including agricultural products in the sample would not change the conclusions of this study.

and statistically significant coefficient on the tariff rate. However, we do find evidence suggesting that price misrepresentation is positively correlated with the tariff rate in the case of differentiated products. The results suggest that a one-percentage-point increase in the tariff rate is associated with a 0.2% increase in the unit value gap. When we estimate a model in first differences, we confirm these findings and find an even larger effect: a one-percentage-point increase in the tariff rate is associated with a 1.2% increase in the value gap. The estimated coefficient is significant at the 5% level.

2.5.2 Undercounting quantities of imported products

Next we turn to another potential channel of tariff evasion, namely undercounting the quantities of imports, and we calculate the difference between the quantity of exports reported by Germany and the quantity of imports recorded by the importing country.

The summary statistics presented in Table 2.11 suggests that this channel of tariff evasion is much less prevalent. In 9 out of 10 countries, the quantity gap is negative suggesting that the quantities recorded by the importing country are larger than those recorded by Germany. The negative value is consistent with the stylized fact that countries tend to monitor their imports more carefully than exports.

Table 2.11: Quantity gap. Homogenous versus differentiated products.

	Mean	St. Dev	Homogeneous Conservative	Differentiated	Homogenous Liberal	Differentiated
Bulgaria	-0.18	1.53	0.119	-0.273	0.104	-0.294
Czech Republic	-0.07	1.34	0.125	-0.159	0.082	-0.157
Hungary	-0.13	1.52	0.024	-0.188	0.007	-0.195
Latvia	-0.14	1.55	0.000	-0.178	-0.027	-0.181
Lithuania	-0.33	1.49	-0.202	-0.370	-0.219	-0.375
Poland	-0.04	0.98	0.032	-0.056	-0.014	-0.044
Romania	-0.38	1.63	-0.076	-0.488	-0.112	-0.502
Russian Federation	-0.21	1.70	-0.184	-0.216	-0.190	-0.216
Slovenia	0.01	1.59	0.263	-0.078	0.239	-0.093
Ukraine	-0.12	1.73	0.052	-0.162	0.045	-0.174

Table 2.12: Quantity gap by tariff rate.

Country	Quantity Gap		
	Tariff below median (1)	Tariff above median (2)	Difference (2) - (1)
Bulgaria	-0.17 (1713 products)	-0.20 (1700 products)	-0.02
Czech Republic	-0.08 (9283 products)	-0.06 (6065 products)	0.02
Hungary	-0.18 (11129 products)	-0.08 (10720 products)	0.10
Latvia	-0.16 (7940 products)	-0.12 (4918 products)	0.04
Lithuania	-0.33 (6639 products)	-0.34 (2438 products)	-0.01
Poland	-0.05 (12636 products)	0.00 (4873 products)	0.05
Romania	-0.37 (5114 products)	-0.40 (3312 products)	-0.03
Russian Federation	-0.31 (9625 products)	-0.06 (6495 products)	0.24
Slovenia	0.07 (7642 products)	-0.15 (2655 products)	-0.22
Ukraine	-0.18 (6820 products)	-0.03 (4711 products)	0.15

While the quantity gap is always negative for differentiated products, it is positive in the majority of countries when homogenous products are considered. This is true in 7 out of 10 countries in the case of the conservative definition and in 5 out of 10 countries in the case of the liberal definition. It is may be easier to undercount quantities of homogenous goods as they tend to be sold by weight rather than by piece. As expected, the quantity gap is larger for products with the above median tariff. This is true in 6 out of 10 countries considered (see Table 2.12).

When we repeat our econometric exercise with the quantity gap as the dependent variable, we find little support for undercounting being a major channel of tariff evasion. While the model in levels produces positive coefficients on the tariff rate as well as on its interaction with the differentiated product dummy, both coefficients lose their significance in a first difference specification (Table 2.13).

Table 2.13: Quantity gap. Homogenous versus differentiated products.

	(1)	(2)	(3)	(4)	(5)	(6)
	Levels			First differences		
Tariff	0.007	0.002	0.003	0.000	0.001	0.001
	(0.001)***	(0.001)*	(0.001)***	(0.001)	(0.001)	(0.001)
Tariff*Conservative dummy		0.012			-0.001	
		(0.001)***			(0.002)	
Tariff*liberal dummy			0.01			-0.001
			(0.001)***			(0.002)
Country-year fixed effects	Yes	Yes	Yes	No	No	No
Product fixed effects	Yes	Yes	Yes	No	No	No
Country fixed effects	No	No	No	Yes	Yes	Yes
Agricultural products	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded
Observations	121963	121963	121963	94658	94658	94658
Adjusted R-squared	0.01	0.01	0.01	0.0002	0.0002	0.0002

All regressions include a constant. Robust standard errors are listed in parentheses.
**** significant at 10%; ** significant at 5%; *** significant at 1%.

2.5.3 Misclassification of imported products

Finally, we turn to misclassification of products as another potential channel of tariff evasion. We follow Fisman and Wei (2004) and include in our basic specification an additional regressor–the average tariff on similar products which are defined as all other 6-digit products belonging to the same 4-digit HS category. The average is weighted by the share of each product in German exports within each 4-digit HS

category.[12] This additional regressor enters the estimated equation by itself as well as in interaction with the differentiated product dummy. If misclassification takes place, we expect to see a negative coefficient on the tariff on similar products, which would signify that holding the own tariff rate constant, a lower tariff on similar products creates more opportunities for misreporting. If such misclassification is easier for differentiated products, we would expect the coefficient on the interaction term to bear a negative sign.

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[12] The summary statistics for each importing country are presented in Appendix 2.1 Table A2.3. Note that using an unweighted average would lead to similar conclusions.

Table 2.14: Results with tariffs on similar products.

	(1)	(2)	(3)	(4)	(5)	(6)
	Levels			First differences		
Tariff	0.006	0.000	0.000	0.004	-0.002	-0.002
	(0.001)***	(0.002)	(0.002)	(0.004)	(0.006)	(0.006)
Tariff on similar products	0.003	0.001	0.002	-0.001	-0.001	0.001
	(0.002)	(0.002)	(0.002)	(0.004)	(0.006)	(0.005)
Tariff*Conservative dummy		0.013			0.01	
		(0.003)***			(0.008)	
Tariff on similar products *Conservative dummy		0.002			0.000	
		(0.003)			(0.008)	
Tariff*Liberal dummy			0.013			0.011
			(0.003)***			(0.008)
Tariff on similar products *Liberal dummy			0.000			-0.004
			(0.003)			(0.008)
Country-year fixed effects	Yes	Yes	Yes	No	No	No
Product fixed effects	Yes	Yes	Yes	No	No	No
Country fixed effects	No	No	No	Yes	Yes	Yes
Agricultural products	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded
Observations	123857	123857	123857	95509	95509	95509
Adjusted R-squared	0.6	0.6	0.6	0.00	0.0001	0.00

Robust standard errors in parentheses. Tariff on similar products is defined as the weighted tariff on all *other* 6-digit products belonging to the same 4-digit category. Weights are equal to product export shares within the 4-digit category.
* significant at 10%; ** significant at 5%; *** significant at 1%.

In contrast to the findings of Fisman and Wei, we do not find that misclassification (at least within the same 4-digit HS category) is prevalent in transition countries. As can be seen in Table 2.14, tariff on similar products does not appear to be statistically significant in any specification. Neither does its interaction with the differentiated product dummy. Our basic result, suggesting that elasticity of missing trade is larger for differentiated products, remains unchanged in the specification in levels. The overall responsiveness of missing trade to the tariff rate, however, retains its

significance in only one specification. These changes in results are most likely due to a high correlation between own tariff rate and the tariff rate on similar products (0.86).

The lack of evidence on misclassification may be attributed to high correlation between own tariff and tariff on similar products or to the possibility that misclassification takes place outside the same 4-digit category. For example, when in 2000 Johnson & Johnson was importing to Russia their "2-in-1 Shower Gel" the company categorized it as a soap substitute, but customs decided to consider the product as a cosmetic and the company had to pay a 20% instead of a 15% duty (Aris, 2000). While soap is included in the 3401 HS category (HS 340120 is "soap in other forms"), cosmetics belong to HS 3304 ("beauty, make-up, skin-care, nes").

In sum, our analysis suggests that differentiated products may lend themselves more easily to tariff evasion and that such evasion is likely to take place through misrepresentation of product prices rather than undercounting of physical quantities or misclassifying products.

2.6. Conclusions

An emerging literature building on Rauch's (1999) paper has demonstrated some unique characteristics of trade in differentiated products. This paper contributes to the literature on differentiated products by postulating that such products may be subject to greater tariff evasion due to the difficulties associated with assessing the quality and thus the price of such products, which creates greater scope for tariff evasion on the part of importers and corrupt customs officials.

Using product-level data on German exports to 10 Eastern European countries we demonstrate empirical support for this hypothesis. We show that the trade gap, defined as the positive discrepancy between the value of exports reported by Germany and the value of imports from Germany reported by an Eastern European importer, is positively correlated with the level of tariff in 8 out of 10 countries, thus generalizing the result of Fisman and Wei (2004) found for China. Further, we demonstrate that the responsiveness of the trade gap to the tariff level is greater for differentiated products than for homogenous goods. A one-percentage-point increase in the tariff rate is associated with a 0.6% increase in trade gap in the case of homogenous products and a 2.1% increase in the case of differentiated products. Finally, our results indicate that the greater tariff evasion observed for differentiated products tends to place through misrepresentation of the import price.

While our study does not explicitly focus on the effects of customs reform, its findings suggest that limiting discretion of customs officials, introducing systems allowing for verification of import documents or price comparisons with similar products and introducing effective audits of customs officials are likely to lower tariff evasion. Our results also provide evidence in favor of having a uniform tariff structure which would dampen the incentives and the ability to misclassify imported products.

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Data Appendix 2

The data coverage for individual countries is as follows:

Bulgaria: 2001-2002; Czech Republic: 1996-2001; Hungary: 1992-2001; Latvia: 1996-2003; Lithuania: 1995-2000; Poland: 1994-2003; Romania: 1999-2003; Slovenia: 1999-2003; Russian Federation: 1996-2003; Ukraine: 1996-2002.

Tariff data are not available for all years. In case of missing data we keep the tax rate constant until a new tariff rate is available. We fill in the tax rates for a maximum of three periods.

In the WITS database, Hungarian imports are reported only if the value is above US$1000. In order to keep a similar structure, we drop all the exports from Germany whose value is below this threshold. A similar problem arises for Poland. No imports below US$50,000 are reported by Poland. We apply the same strategy as before by dropping all the exports from Germany whose value is below this cutoff.

Table A2.1: Average tariff rate in the first and last year

Country	Tariff rates		
	First year	Last year	Difference
	(1)	(2)	(2) - (1)
Bulgaria	3.91	4.01	0.10
	(1706 products)	(1747 products)	
Czech Republic	6.25	2.09	-4.15
	(2785 products)	(2612 products)	
Hungary	12.94	5.55	-7.39
	(2282 products)	(2193 products)	
Latvia	3.98	3.43	-0.54
	(1433 products)	(1753 products)	
Lithuania	3.92	3.54	-0.38
	(1537 products)	(1775 products)	
Poland	11.78	1.90	-9.88
	(1784 products)	(1756 products)	
Romania	8.37	6.49	-1.88
	(1929 products)	(2013 products)	
Russian Federation	12.08	10.35	-1.73
	(2073 products)	(1791 products)	
Slovenia	10.69	0.74	-9.95
	(2188 products)	(2061 products)	
Ukraine	7.86	7.81	-0.05
	(1756 products)	(1616 products)	

Table A2.2: Average share of imports from Germany on total imports

	Avg. share of imports from Germany on total imports
Bulgaria	15%
Czech Republic	31%
Huingary	25%
Latvia	16%
Lithuania	17%
Poland	25%
Romania	15%
Russian Federation	12%
Slovenia	19%
Ukraine	8%

Table A2.3: Summary statistics for tariff on similar products

Country	Mean	Standard deviation	Minimum	Maximum	Obs.
Bulgaria	3.31	6.19	0	67	3453
Czech Republic	3.98	5.99	0	138	15956
Hungary	7.78	10.72	0	150	21810
Latvia	4.25	6.86	0	75	11754
Lithuania	3.42	6.99	0	70	9927
Poland	4.46	12.50	0	295	17130
Romania	6.33	8.44	0	98	9694
Russian Federation	11.52	8.18	0	100	16243
Slovenia	6.23	7.02	0	45	10367
Ukraine	8.06	8.85	0	50	11682

Appendix

Figure A1. Prevalence of corruption in customs vs. responsiveness of trade gap to tariff level
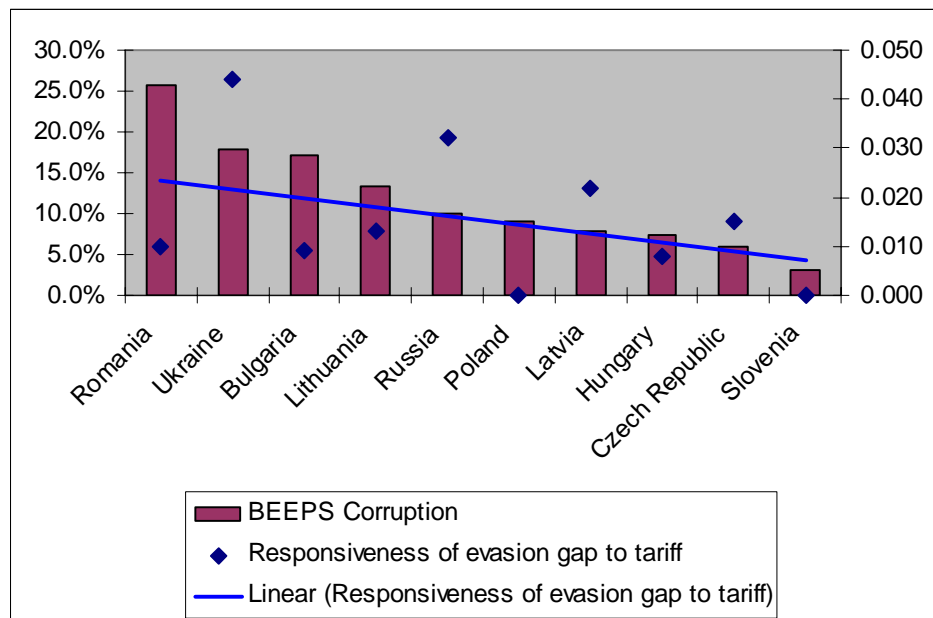
Notes: Responsiveness of trade gap to tariff is equal to the coefficient estimated in Table 2.4. Statistically insignificant coefficients are set to zero. BEEPS corruption is defined as the percentage of firms reporting that "additional payments" are made "always," "usually" or "frequently" when dealing with customs and imports. It is the average value for the 1999 and 2002 wave of the survey.

The exact questions used in the survey were as follows:

"How frequently do firms in your line of business have to pay some irregular "additional payments" to deal with customs and imports?" (1999 survey)

"Thinking now of unofficial payments/gifts that a firm like yours would make in a given year, could you please tell me how often would they make payments/gifts to deal with customs and import" (2002 survey)

The possible answers were: always, usually, frequently, sometimes, seldom, never.

Chapter 3

Information and Migration

Gaia Narciso

3.1 Introduction

The aim of this paper is twofold. Fist, it analyzes the types of information migrants have before migrating and their effects on the ex-post evaluation of the migration decision. Second, it offers a new interpretation of migration networks as a key vehicle of information for potential migrants.

The studies analyzing the migration decision[1], beginning with the seminal paper by Harris and Todaro (1970), make an implicit assumption: potential migrants know the labour market of the destination country, in terms of wage levels and probability of finding a job. This is hardly to be the case in reality. Potential migrants have conjectures about labour market opportunities in the destination country and they base their migration decision on these conjectures. Studying the type and the source of information migrants have *before* migrating becomes therefore crucial. Potential migrants might receive information about the destination country from many different channels: television, newpapers, previous migrants' advices, common beliefs among relatives and friends in the home country. All these elements allow potential migrants to formulate conjectures about the viability of a destination country.

The migration choice is modelled as the sequential decision of agents who choose whether to migrate or stay put on the basis of their own prior conjectures and,

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[1]See Massey et al. (1993) for a review of theories of international migration.

possibly, on the basis of the experience of previous migrants. All agents have prior beliefs about the viability of a destination country and they all observe the action chosen by previous agents. Besides, with a certain probability, individuals observe previous migrants' payoffs and use this information to update their prior beliefs about the viability of the destination country. Potential migrants choose whether to migrate or stay put on the basis of their prior or updated conjectures. Direct information from previous migrants allows potential migrants to learn about the viability of a destination country, thus updating prior conjectures and making the migration choice more efficiently. Given the heterogeneity of priors, agents who do not possess direct information might have prior conjectures inducing migration even when a particular destination country is not viable. The model predicts that migrants who had access to previous migrants' experience are more likely to be satisfied ex post relative to migrants who based their migration decision on their prior only.

I provide evidence of the role of different types of information by employing a survey conducted in Italy in 1997 among Ghanaian migrants. The survey contains detailed information regarding the actual status of migrants and their endowments before migrating. In particular, migrants are asked whether they had information on a set of issues regarding the destination country *before* migrating. The unexpected result is that about 30% of respondents had no information at all. Besides, those

migrants who had information usually received the information from one source only. I distinguish between indirect sources and direct sources. Potential migrants can either collect information from media and relatives and friends in the country of origin (*indirect information*) or they can receive information from incumbents, *i.e.* relatives and friends in the destination country (*direct information*). Indirectly informed migrants are found to be more likely to regret their migration decision, as they might have migrated on the basis of extremely positive conjectures. Directly informed agents, on the other hand, are more likely to be satisfied about the migration choice also after controlling for other network variables. The results are robust also when I consider a more restrictive measure of information.

The relationship between migration and media has been extensively analyzed in sociological studies. As pointed out by King and Wood (2001), "[...] *images of wealth and of a free and relaxed lifestyle in the "West" or the "North" are commonplace in the developing and transforming countries of the world, and the constancy of these images in global media [...] tends to reinforce their 'truth' in the eyes of the beholders*"[2] Mai (2001) analyzes the impact of television on the migration decision taken by Albanians. In the early Nineties, attracted by the image of wealth given by Italian television programs, thousands of Albanians migrated to Italy. A recent

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[2]Russell King and Nancy Wood (2001), page 1.

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paper by Braga (2007) empirically analyzes the impact that the distance from Italian television repetitors plays in shaping the migration decision for Albanians. Braga finds a positive and significant relationship: the stronger the television signal in a region, *i.e.* the higher the accessibility to Italian tv programmes, the more likely migration takes place. Among others, Barjaba et al. (1996) document the following disappointment and disillusion Albanian migrants experienced at the arrival: Italy was a lot different from what they had imagined by watching television.

Similarly, information on the destination country from relatives and friends in the country of origin is subject to overoptimistic expectations. Ottavia Schmidt di Friendberg (1994) an anthropologist who has widely studied Senegalese migration to Europe, summarizes this biased perception in a simple statement "*[...]if you live in Europe, you are rich*".

To the best of my knowledge this is the first work which focuses on the impact of different types of information on the migration decision. In the survey, migrants are asked what they would do in case they had the hypothetical possibility to take again the migration decision. Migrants' answers to this question are used as a measure of the ex-post satisfaction level. Directly informed migrants are more likely to confirm their choice, while indirectly informed migrants tend to regret more their migration decision. I interpret this result as showing that migrants with direct infor-

mation correctly updated their beliefs about the "viability" of the destination country and learned from incumbents' experience. They are less likely to be disappointed as they knew, before migrating, what to expect. On the other hand, uninformed agents and agents who collected indirect information did not learn from previous agents'experience. However, a distinction has to be made: indirectly informed migrants are found to regret more the migration decision than uninformed. This result supports the sociological findings: indirect sources of information seem to have inflated expectations about the destination country, thus causing higher dissatisfaction ex post.

Many studies have focused on the role of migration networks, migration chains, and herd effects. Carrington, Detragiache and Vishwanath (1996) are the first to show the impact of networks in reducing migration costs. In line with Carrington et al., Helmenstein and Yegorov (2000) analyze the difference between single migrants and chain migrants. Chain migrants can reduce their settlement expenses by relying on the network they are linked with. For example, chain migrants might share the same housing or receive assistance in finding a job. Epstein (2002) applies the herd behavior model by Banerjee (1992) to the decision to migrate. Epstein theoretically shows the role of previous agents' actions in shaping the migration decision of potential migrants. Potential migrants do not have full information regarding

different possible destinations, although they can observe where previous migrants have located. Epstein shows that potential migrants might forgo their private information and base their migration decision on what previous migrants have done on the assumption that they might have had better information at the moment of the migration decision. Epstein extends this model by allowing potential migrants to receive two signals about the optimal destination country: a general signal and a specific signal from migrants already abroad. Potential migrants are likely to weight the specific signal from previous migrants more than the general signal in the migration decision. I take a different approach and rule out herding behavior by potential migrants. My idea is that information from previous agents, rather than the action taken, is the key element. I analyze the migration decision as the sequential decision of an enterpreneur who decides whether to enter a market or not, as presented by Bala and Goyal (1994). All enterpreneurs have prior conjectures about the viability of the market and they learn over time from their own experience and from the experience of previous enterpreneurs. In line with Bala and Goyal, I model the migration choice as the sequential decision of agents who move on the basis of their own prior or updated conjectures, independently from the choice of the agents of the previous generation.

The paper is structured as follows. Section 3.2 presents the model. Section

3.3 introduces the dataset, while the role of information is discussed in Section 3.4. Section 3.5 proposes the empirical results Finally, Section 3.6 concludes.

3.2 The model

I consider the sequential migration choice of potential migrants who decide whether to migrate or stay put on the basis of their conjectures about the viability of a destination country. Agents live for one period and they face the migration decision at the beginning of the period. Wages in the destination country can be either high, w_H or low, w_L. A destination country is either *viable* if $prob(w = w_H) = p_H$, or *not viable* if $prob(w = w_H) = p_L$, where $p_H > p_L$. Wage levels in the destination country are common knowledge. Young agents are born with prior conjectures, μ, about the the destination country being *viable*, that is μ is the conjecture that $prob(w = w_H) = p_H$. Prior conjectures can be extreme, in the sense that $\mu \in [0, 1]$. Heterogeneity arises in terms of prior beliefs, which are randomly drawn from a belief density function $f : [0, 1] \to \mathbb{R}_+$. In line with Bala and Goyal (1994), I assume that any prior belief is possible, *i.e.* the support of f is all $[0, 1]$. Agents are Bayesian rational and the action chosen by a potential migrant does not affect future agents' payoffs. The migration decision is taken sequentially and the order in the sequence is exogenously given. Potential migrants observe the action taken by previous agents, *i.e.* they

know whether previous agents migrated or stayed put. Besides, with probability λ potential migrants observe previous migrants' payoffs as well and use this information to update their conjectures about the viability of the destination country. I define as *directly informed* those potential migrants who observe incumbents' payoffs. Directly informed agents behave as the enterpreneurs described by Bala and Goyal (1994). With probability $(1 - \lambda)$ an agent is *not directly informed* and keeps his own prior conjectures, without updating. The expected wage level in the origin country, w_0, is known and it is such that $[p_L w_H + (1 - p_L)w_L] < w_0 < [p_H w_H + (1 - p_H)w_L]$.

I indicate with K_t the wage realization of a migrant at time t, where $K_t = 1$ if the agent at time t has a high wage realization, $w = w_H$, and $K_t = 0$ if the agent at time t has a low wage realization, $w = w_L$.

At the beginning of each period a new potential migrant is born and he decides whether to migrate or stay put. With probability $(1 - \lambda)$ the potential migrant does not have access to the information regarding previous agents' payoffs. In this case, the expected utility from migrating at time t is:

$$\mu_t \left[p_H w_H + (1 - p_H)w_L\right] + (1 - \mu_t) \left[p_L w_H + (1 - p_L)w_L\right] - c$$

where c is the fixed migration cost, which is common knowledge. Therefore, the action chosen by an agent who is not directly informed at time t, given his prior belief,

μ_t, is:

$$
A\left(\mu_t\right) =
\begin{cases}
M \ (Migrate) & \text{if } \mu_t \geq \overline{\mu} \\
\\
S \ (Stay\ put) & \text{if } \mu_t < \overline{\mu}
\end{cases}
\tag{1}
$$

where $\overline{\mu} = \frac{w_0 + c - [p_L w_H + (1-p_L) w_L]}{(p_H - p_L)(w_H - w_L)}$.

With probability λ the new potential migrant is *directly informed*. Consider a potential agent at time t and denote the path up to time t as h. The directly informed agent observes the payoffs of all previous migrants (incumbents) in the destination country up to time t and uses this information to update his prior about the viability of the destination country. Agents are bayesian rational and use previous migrants' payoffs to update their prior conjectures about the viability of the destination country. Using Bayes rule and given the prior conjecture, μ_t, a directly informed agent's updated conjecture is:

$$
\kappa_t\left(h\right) = \frac{\mu_t}{\mu_t + s_t(h)(1-\mu_t)}
$$

where $s_t(h) = \dfrac{\prod_{\{\tau < t : A_\tau = M\}} p_L^{K_\tau}(1-p_L)^{1-K_\tau}}{\prod_{\{\tau < t : A_\tau = M\}} p_H^{K_\tau}(1-p_H)^{1-K_\tau}}$ .is the outcome likelihood ratio up to time t.

Given the path h, a directly informed agent at time t migrates iff:

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$$\kappa_t(h) \left[p_H w_H + (1 - p_H) w_L\right] + (1 - \kappa_t(h)) \left[p_L w_H + (1 - p_L) w_L\right] - c \geq w_0$$

$$\kappa_t(h) \geq \frac{w_0 + c - [p_L w_H + (1 - p_L) w_L]}{(p_H - p_L)(w_H - w_L)} = \overline{\mu}$$

Therefore, the optimal action chosen by a directly informed agent at time t after a history h is:

$$A\left(\kappa_t(h)\right) = \begin{cases} M\ (Migrate) \text{ if } \kappa_t(h) \geq \overline{\mu} \\ \\ S\ (Stay\ put) \text{ if } \kappa_t(h) < \overline{\mu} \end{cases} \tag{2}$$

Let us consider the sequential decision of a potential migrants.

In period 1, a new potential migrant is born with a prior conjecture, μ_1, about the viability of the destination country. He has to take the decision of whether to migrate or stay put on the basis of his own prior. As the migration process has just started, having access to past information does not matter.

In period 2, a new potential migrant is born with a prior conjecture μ_2. If agent in period 1 migrated and the new potential migrant is directly informed, then the new potential migrant will use agent 1's payoff to update his prior conjecture, $\kappa_2(h)$,

and he will decide whether to migrate or not using the decision rule described in (2). If agent 1 migrated, but the new potential migrant is not directly informed, or if agent 1 did not migrate, then the new potential migrant will decide on the basis of his prior μ_2 using the decision rule described in (1).

For any period $t \geq 3$, a new potential migrant is born with prior μ_t. With probability λ he is directly informed and uses previous migrants' payoffs to update his prior. If no previous agent migrated or if the new potential migrant is not directly informed, then the potential migrant uses his prior only.

RESULT 1: *If $\mu \in [0,1]$ and $p = p_L$, as $t \to \infty$, no directly informed agent migrates to the destination country.*

Proof: For the law of large numbers, if $p = p_L$ and $t \to \infty$, then $s_t(h) \to \infty$ and $\kappa_t(h) \to 0$. Therefore, no directly informed agent ever migrates to the destination country.

RESULT 2: *If $\mu \in [0,1]$ and $p = p_H$, as $t \to \infty$ directly informed agents migrate to the destination country.*

Proof: For the law of large numbers, if $p = p_H$ and $t \to \infty$, then $s_t(h) \to 0$ and $\kappa_t(h) \to 1$. Therefore, directly informed agents migrate to the destination country.

On the other hand, agents who do not have access to direct information can not learn from previous agents' experience. Suppose that the destination country is *not*

viable, $p = p_L$. As the support of f is $[0, 1]$, *i.e.* all prior beliefs are possible, then eventually an indirectly informed potential migrant is born with a prior belief higher than $\overline{\mu}$[3].

Similarly, consider the case of a *viable* destination country, $p = p_H$. As the support of f is $[0, 1]$, then eventually an indirectly informed potential migrant is born with a prior belief lower than $\overline{\mu}$.

Indirectly informed potential migrants can commit two types of mistakes when deciding whether to migrate or not. If their prior are extremely negative, *i.e.* when μ is low, they might decide not to migrate even if the destination country is viable. If their prior conjecture is very optimistic, they might decide to migrate even in the case when the destination country is not viable. Directly informed migrants, on the contrary, learn from previous migrants' experience and update their conjectures about the viability of the destination country.

3.3 Data

The dataset used arises from a survey conducted in Italy by Eurostat and NIDI (Netherland Interdisciplinary Demographic Institute) under the supervision of the Commission of the European Communities. It is part of a larger project aiming at

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[3]See Lemma 1 in Bala and Goyal (1994).

understanding the push and pull factors of international migration to the European Union. The survey was carried out in 1997 among Ghanaian migrants aged 18-65, who have been in Italy for more than 3 months and less than 10 years. Interviews took place in 5 Italian provinces, Brescia, Bergamo, Modena, Roma, Caserta and Napoli, thus covering North, Centre and South of Italy[4]. Some of the interviewers were Ghanaian and, in the case of Modena, they were two prominent figures of the Asanti community. This is likely to have fostered the trust and the willingness of respondents to answer even delicate questions.

Migration from Ghana to Italy started in the Eighties[5]. Most Ghanaian migrants were initially illegal, as they either entered illegaly or outstayed a tourist visa. Between 1986 and 1998 three amnesties took place, which allowed family reunions as well. Initially, Ghanaians settled in the South of Italy. Over time, however, Ghanaians moved from Southern regions to Northern ones. At the time the survey was conducted, Ghanaian migrants were quite spread throughout Italy. In 1998, 30% of Ghanaians were mainly located in the North of Italy (30 % in Veneto, 24% in Lombardy, 17% in Emilia Romagna), while a small fraction lived in the South (10%

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[4]Brescia, Bergamo and Modena are in the North of Italy, Roma is in the Centre, Caserta and Napoli are in the South.

[5]Italy has a long history of outmigration and only since the beginning of the Seventies it has become a destination for immigration. Migration flows intensified in the Eighties and Nineties, although only in the mid-Eighties the first migration regulation was implemented. Detailed and consistent data on the actual number of migrants and the country of origin are available starting from the early Nineties only.

in Sicily, 8% in Campania)[6]. In 1997, when the survey took place, the total number of Ghanaians with a permit of stay was 15,293[7].

The sample consists of 578 migrants, of which about 18% are women. Unlike other migrants' communities, Ghanaian women migrate mainly because of economic motives rather than for family reunion or personal reasons. Consistently with this finding, female participation in the Italian labour market among Ghanaian migrants is significantly higher than in other migrants' communities[8]. A consistent share of the respondents belong to the Asanti ethnic group (44.10%), followed by Fanti (16.41%), Ga (8.72%) and Akwapim (8.21%). Migrants are relatively young, the average age is 33, and they have been in Italy on average for about 5 years. The average yearly wage in Italy is around $ 7900 and it refers to wage from employed work and self-employment. The questionnaire provides 5 income categories, which have been transformed to construct a consistent income measure in line with Ligon (1989). I also estimate the wage that migrants would have got had they remained in Ghana by using the Third Round of the Ghana Living Standard Survey[9]. The average yearly wage in Ghana is around $ 170.

About 60% of the respondents are married. As Table 3.1 reports, the majority has

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[6]See Birindelli et al. (2000).
[7]Source: ISTAT, www.istat.it/dati/catalogo/20020120/ .
[8]See Birindelli et al. (2000) for an extensive overview of female Ghanaian migration in Italy.
[9]See the Data Appendix for details.

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gained secondary education (almost 58%), and less than 7% has obtained a higher level of schooling.

Regarding the existence of a migration network, more than half (58%) knew somebody in Italy before migrating and, in this case, the wide majority (81.44%) expected to receive help from incumbents. The migration decision is often a collective decision, where the family and in some case the whole clan are involved, as illustrated by Azam and Gubert (2005), Tiemoko (2003), Epstein and Gang (2004). Family and friends paid the migration cost for about 43% of the migrants in the sample. The community has a role in financially helping the potential migrant even when the migration decision is not collective. Almost 39% of migrants who were not influenced by others in the migration decision had the migration cost paid by the family and friends.

The unemployment rate among Ghanaian migrants is rather high, around 16%. However, it was not too different from the unemployment rates found in the South of Italy in the same period[10].

Migrants are asked what they would do if they had the hypothetical chance to decide again. The three options given are "migrate again to Italy", "migrate to another country", "not migrate at all". The majority of migrants state that

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[10]The unemployment rate in Italy in 1997 was 12%. Source: WDI.

they would take again the same decision, *i.e.* migrate again to Italy. On the basis of this question, I build an indicator variable, *migrate_same*, taking value 1 for those migrants who would migrate again to Italy and 0 otherwise. This variable is interpreted as the ex-post evaluation of the migratory experience and it will be the dependent variable in the analysis.

Finally, migrants do not seem to have clear-cut intentions about their future. A high share of respondents (33%) does not know whether they would return to their home country or stay in the host country. Even those who would like to return have not decided when. It appears that returning to the home country is more a long term desire than an actual decision. It is relevant to note that respondents declare that they would prefer to stay for two opposite reasons. First, migrants declare they would like to stay because they are economically settled, *i.e.* they have a satisfactory work or a good wage (42%). Second, respondents answer that they would like to stay because they have not met the economic goals yet or because they do not have enough money to return (33%). This result is crucial as it addresses the selection problem which may arise in a survey conducted among migrants: mobility of unsatisfied migrants is reduced by the economic impossibility of affording to return to the home country or move to another country.

Insert Table 3.1 about here

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Table 3.2 reports the main push and pull factors that triggered migration. Economic push factors appear to be particular relevant: more than 90% of the respondents left Ghana because of economic reasons. As for the pull factors, Italy appears to have been chosen mainly for economic reasons, although personal motives do play a significant role. In particular, the presence of an existent migration network acts as a magnet for 14% of the respondents.

Insert Table 3.2 about here

3.4 The Role of Information in the Migration decision

The survey contains an extensive section regarding the type of information migrants had before migrating. Migrants are asked whether they had information on a set of topics[11] and whether this information was relevant for the decision of migrating. The striking feature is that about 31% did not have any information *at all* before migrating. Very few migrants had information regarding issues as wages, opportunities of finding a job or admission regulation rules for foreign migrants. This is particularly

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[11]Level of wages, opportunities to find a job, cost of living, unemployment/disability benefits, child allowances, health care system, admissions regulation rules for foreign migrants, school system, attitude towards foreigners, taxes.

relevant if we consider that emigration took place for economic reasons for 90% of the respondents. In particular, almost 26% of those who had chosen Italy for economic reasons had *no* information on any of the topics they were asked about. Migrants are also asked whether the information they had relatively to each issue played a role in the migration decision. As shown in Table 3.3, percentages in this case are slightly lower with respect to the ones shown in the upper panel. This question appears to be even more interesting as it captures the role of information in influencing the migration decision. If migrants had information about some labour market issues regarding the destination country and if this information actually played a role in the migration decision, then it is sensible to conclude that this information must have been so positive to induce agents to migrate. Finally, information about admission regulation play a less relevant role in the migration decision. This could be explained by the fact that the majority of respondents either entered illegally or outstayed a touristic visa.

Insert Table 3.3 about here

Sources of information are relevant as well. I distinguish between information from family or friends in the host country (*direct information*), from family and friends in the home country and information from media (*indirect information*). A few respondents report of having collected information from schools or from agencies

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in the country of origin (*other sources*). In the light of the model presented in Section 3.2 and the sociological studies discussed in the Introduction, my prior is that indirect information is likely to induce potential migrants to have conjectures about the destination country abroad which are more distant from the actual possibilities. Media and common beliefs in the country of origin are expected to fuel expectations about the destination country, thus provoking disappointment and disillusion once migrants' expectations clash with the reality in the destination country.

A potential concern regards the number of sources available to potential migrants. In the questionnaire, the question regarding sources of information is open and respondents can choose more than one source. Table 3.4 reports tabulation of the three main sources. It appears quite clearly that migrants tend to rely on one source of information only. This evidence allows to consider separately the three main sources and to correctly identify the different impact that different sources have on the evaluation of the migration decision. The prior is that direct information induces more correct conjectures, while indirect information might cause a widening of the distance between the conjecture and the actual wage distribution. As a consequence, dissatisfaction is likely to be higher for migrants who had indirect information.

Insert Table 3.4 about here

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Aggregate data regarding inflows of migrants from Ghana to Italy are available starting from 1992 only. Figure 1 displays the distribution of the arrival year for the sample of survey's respondents. Two peaks can be recognized, the first one in 1989, the second in the period 1992-1993. In particular, the peak in 1989 is attributed to the amnesty in 1986, which allowed family reunions and "*a consolidation of the Ghanaian community*" (Birindelli et al., 2000). I split the sample in order to analyze the pre-migration features of first movers compared to late movers. I identify first movers as migrants who migrated before 1991, and late movers as migrants who arrived in Italy after 1992 (Table 3.5). First movers tend to be older at the year of arrival, and are more likely to be married before migrating, relative to late movers. The two groups do not differ in terms of education and work experience before migrating. However, they do differ in terms of family background. First movers are more likely to come from a household owning land[12]. I also control for the financial situation of the household of origin before migration. I construct a dummy which takes value 1 if any other household member had a job before migration took place and it takes value 0 otherwise. This variable is positively correlated with another variable which measures the subjective evaluation about the household of origin financial situation as stated by migrants. The two samples do not differ in terms of

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[12]Note that land was acquired using remittances sent from migrants in one case only.

the financial situation of the household of origin. Interestingly, there is no difference between the early movers and late movers in terms of the existence of a migration network. However they do differ in terms of direct information, as late movers are more likely to have information from incumbents relative to first movers. There is no statistically significant difference in terms of indirect information. In line with the model, learning from previous migrants becomes relevant for migrants who are late in the queue.

Insert Table 3.5 here

Two concerns arise when considering directly informed migrants versus indirectly informed migrants and uninformed migrants. First, directly informed migrants might possess a higher educational backgroud than indirectly informed migrants and uninformed migrants, or they could differ in terms of job experiences. To control for this possibility, I analyze the relationship between education and the type of information (Table 3.6). Directly informed migrants are not statistically different from indirectly informed and uninformed migrants in term of education, measured as secondary school and university, and in terms of job experience in the home country. Second, it could be argued that possessing information from incumbents might simply measure the existence of a migration network. The lower panel in Table 3.6 presents the relationship between migration network externalities and direct information. Less

than half of migrants with a network abroad before migrating have direct information from incumbents. Besides, when I restrict the sample to migrants endowed with a migration network in Italy before migrating, having direct information does not have any significant impact on the help received by incumbents. Contacting an incumbent in order to acquire information does not mean that the potential migrant will be more likely to be helped by the incumbent. The only statistically significant difference is that directly informed individuals are more likely to expect help from the incumbent[13].

Insert Table 3.6 here

3.5 Econometric analysis

The empirical analysis proceeds in three steps. The first step consists in analyzing the role of migration networks in providing help to newcomers and its effects on the satisfaction level about the migration experience. The second step consists in comparing the group of informed migrants, classified on the basis of the sources of information, and the group of uninformed migrants. The third step focuses on the role of migration networks in providing information to potential migrants. The

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[13]The same results hold when I exclude uninformed migrants.

empirical analysis will therefore be conducted focusing only on the group of informed migrants and on the different sources of information.

The dependent variable in all the specifications is the dummy $migrate\_same$ described in Section 3.3, which proxies the ex-post evaluation of the migration decision.

The main specification takes the following form:

$$migrate\_same_i = \beta_0 + \beta_1 DirectInfo_i + \beta_2 IndirectInfo_i + \beta_3 Networks_i + \delta X_i + \varepsilon_i$$

The variables of interest are the three different information variables (*Information from friends in the Destination Country, Information from friends in the Home Country, Information from Media*) and the migration network variable. My prior is that the estimated coefficient on the variable "I*nformation from friends in the destination country*" is positive and significant, while the estimated coefficients on the two indirect information variables are negative and significant. A few respondents cite a fourth residual source of information, which I control for in all the specifications (*Information from other sources*). The group of uniformed migrants is therefore the reference group. I control for a number of other covariates, X_i, as education, age, marital status, migratory experience in the host country, wage in Italy and the estimated wage migrants would have got had they stayed in Ghana, as defined in

Section 3.3. I expect that the higher the wage in Ghana, the lower the probability of confirming the migration choice. Migration history is relevant as well in the assessment of the experience. Therefore, I control for the number of places where the migrant has moved and the number of years spent in Italy, which should measure how settled in the host country the migrant is. In order to control for the migration cost, I use a dummy variable taking value 1 if the migration cost was paid by the family or the community and 0 if the migrant paid it.

Insert Table 3.7 here

Column 1 of Table 3.7 reports the results of the basic specification. As expected, income in Italy has a positive and significant impact on the probability of being satisfied about the migration decision. In line with the prediction of the model, the estimated coefficient on wage in Ghana is negative, although it is not statistically significant. Migrants living in the North are more likely to be satisfied about their migratory experience. Given the differences between Northern and Southern regional labour markets, this result is not surprising. Changing residences is negatively correlated with the satisfaction level.

The model postulates the impact of migration cost in the evaluation of the migratory experience. The higher the migration cost, the higher the threshold level above which conjectures induce migrating. Having the cost paid by the family re-

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duces the migration cost paid by the migrant and therefore increase the likelihood of confirming the migratory experience. The implicit assumption is that migrants do not endogenize the migration cost paid by the family. Consistently with the model, the estimated coefficient of this indicator is positive and significant.

Migration networks are important in decreasing the cost of migration and providing help to newcomers. I introduce migration network effects in the specification presented in Column 3 of Table 3.7. I use two different variables to measure migration networks. The first variable captures network size, measured by the number of people they knew in Italy *before* migrating. The second variable identifies network failure. I construct a dummy variable which takes value 1 if the migrant expected help from the migrants' network in Italy, but did not receive it and 0 otherwise. The network failure variable captures the unexpected increase in the moving cost after the migration decision has been taken. The estimated coefficients of the two network variables are both significant and have the expected signs. The size of the network has a positive impact on the probability of migrating again in the hypothetical case of taking again the migration decision, while network's failures have a negative impact. In line with the migration networks literature presented in the Introduction, migration networks do play a role in helping newcomers in settling in the destination country. My interest, however, is to show the role played by migration networks in

the process of the migration decision, *i.e.* the role of migration networks in providing information to potential migrants.

Table 3.8 reports the estimates of the specification which includes the information variables. The aim is to understand the impact of the different sources of information on the evaluation of the migration experience. Information from incumbents has a positive and statistically significant impact on the satisfaction level on the migratory experience, while the estimated coefficients on the indirect information, measured in terms of information from people in the home country and from the media, are both negative and statistically significant at a 1% level. The estimated coefficient on the residual source of information is not statistically significant. Migrants with indirect information from media and people in the home country regret more their migration decision relative to uninformed migrants. On the contrary, directly informed migrants are more likely to confirm their migration choice. This result is absolutely crucial: in line with the sociological studies discussed in the Introduction, newspapers, television programs, and people's beliefs in the country of origin are found to boost optimistic expectations on the destination country. This eventually leads to a greater disappointment. All the other estimated coefficients maintain their signs and statistical significance.

As a robustness check, I introduce another measure of information. Columns

3 to 5 of Table 3.8 report the results of a new specification where the information variables are expressed in terms of the role of information on the migration decision. As discussed in Section 3.4, the message conveyed by these information variables is stronger, as they allow controlling not just for the existence or not of information, but also for the effects of this information on the migration decision. If a migrant had information on job market opportunities in the destination country before migrating and if this information played a role in the migration decision, then it must have been definitely positive.

Insert Table 3.8 here

In line with the prediction of the model, the estimated coefficient of the yearly wage in Ghana is negative and significant: the higher the wage the migrant would have got by staying in the home country, the higher the probability of regretting his choice. The results on information are robust to this specification. The estimated coefficient of the variable *Information from friends in the Destination Country played a role on the migration decision* is positive and significant. Again, directly informed migrants are more satisfied than uninformed agents. On the other hand, indirectly informed agents are more likely to regret their choice than uninformed. This result is stronger as it captures the role played by media and friends in the country of origin in pushing upwards expectations on the viability of the destination country and how

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these conjectures eventually affect the migration decision. All the other results hold in this specification as well.

As discussed in Section 3.3, the variable *wage in Italy* is constructed on the basis of a 5 categories variable, in line with Ligon (1989), while the variable *wage in Ghana* is obtained by estimating a wage regression using the Ghana Living Standard Survey (Third wave, 1992). Therefore, both income variables could be subject to measurement errors. Table 3.9 reports the results obtained by using non-income variables that could proxy for the migrant's financial situation in Italy and in Ghana. I construct a dummy which takes value 1 if the migrant is unemployed or if he has some casual or bad job in Italy. Then, I use two variables in order to control for the financial background in the home country. The first variable is a dummy taking value 1 if the migrant had a job before migrating and 0 otherwise. The second variable measures the financial situation of the family of origin: I construct an indicator variable which takes value 1 if any other household members in the home country had a job before migration took place and takes value 0 otherwise. As expected, being unemployed or having a bad job in the destination country has a negative impact on the probability of confirming the migration decision. Having a job before migrating has no significant impact on the satisfaction level, while coming from a wealthy household has a negative and statistically significant effect.

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All the three relevant information variables have the expected signs and are statistically significant, even when I consider the role of information in the migration decision(Columns 3 to 5).

Insert Table 3.9 about here

Finally, as a further robustness check, I restrict the attention to directly and indirectly informed migrants only. Table 3.10 reports the results of a specification similar to the one presented in Table 3.9, but for the sample which now excludes uninformed migrants. Restricting the attention to directly and indirectly migrants allows testing the prediction of the model presented in Section 3.2. The model predicts that indirectly informed potential migrants might have two ways of making the wrong migration decision. First, they might decide to stay due to very low prior conjectures about the destination country even in the case where, given perfect information, it would be better to migrate. Second, they could decide to migrate due to very optimistic conjectures even in the case when, given perfect information, they would have done better by staying. As the survey contains data on migrants only, I focus on the second type of mistake. Indirectly informed migrants are more likely to regret their migration decision, as they might have migrated on the basis of extremely positive conjectures.

Insert Table 3.10 about here

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Table 3.10 presents the results with the restricted sample, where the variable "Information from other sources" is the reference group. Networks do still play the same role in increasing migrants' satisfaction level relative to their migration decision in providing help. More importantly, networks play a role in providing information to potential migrants. To understand the impact of different direct and indirect sources of information, Table 3.10 reports the Wald test on the estimated coefficients of the information variables. The results are indeed in line with the predictions of the model. Directly informed agents correctly updated their conjectures before migrating and are therefore satisfied about their migratory experience. Indirectly informed migrants on the contrary, migrated just on the basis of too optimistic information, and are therefore more likely to be unsatisfied about their migratory experience.

3.6 Conclusions

Migration networks have been extensively analyzed in their role of providing help and diminishing newcomers' migration costs. This paper sheds light on another, so far unexplored, aspect of migration networks. I analyze the role of networks in providing information to potential migrants. I distinguish between two types of information: potential migrants can either have access to information from friends in

the destination country (direct information), or they can have access to information from friends in the home country and from media (indirect information). By means of a theoretical model, I am able to show that directly informed migrants correctly update their prior conjectures about the viability of a destination country by using previous migrants' payoffs. Indirectly informed migrants, on the other hand, base their migration decision on their prior only. Indirectly informed potential migrants might have two ways of making the wrong migration decision. First, they might decide to stay due to very low prior conjectures about the destination country even in the case where, given perfect information, it would be better to migrate. Second, they could decide to migrate due to very optimistic conjectures even in the case when, given perfect information, they would have done better by staying. I focus on this second type of mistake by using a survey conducted by EUROSTAT in Italy among Ghanaian migrants. Indirectly informed migrants are found to be more likely to regret their migration decision, as they might have migrated on the basis of extremely positive conjectures. Directly informed agents, on the other hand, are more likely to be satisfied about the migration choice also after controlling for other network variables. The results are robust also when I consider a more restrictive measure of information.

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Data Appendix 3

Wage in Ghana is expressed in US dollars PPP and it is calculated by using the Third Round of the Ghana Living Standard Survey (1992). The regressors of the wage equation are: age, age squared, education (secondary and university level), marital status, gender and ethnic variables (Akan, Ga, Hausa, Dagbani, Ewe). The estimated wage in Ghana is then calculated by multiplying the estimated coefficients by migrants' features. The estimated coefficient are: constant=7.90; university=0.88; secondary school=0.54; age=0.069; age squared=-0.001; man=0.675; married=0.309; Ewe=-0.170; Akan=-.194; Ga=-0.254; Dagbani=-1.020; Hausa=-.0490.

Table 3.1: Summary Statistics

	Mean	Minimum	Maximum
Age	33	20	55
Nbr. of years in Italy	5.6	0	10
Nbr. of places of residence	2.6	1	11
Yearly wage in Italy ($ PPP)	7901	0	27194
Yearly wage in Ghana ($ PPP)	171	18	430
Education			
University	6.75%		
Secondary school	56.57%		
Primary	32.01%		
No education	4.67%		
Before Migration			
	Yes		
Job before migrating	70.59%		
Individual decision	69.03%		
Family paid Migration cost	43.25%		
Any friend in Italy	57.79%		
Expect help from Incumbent	81.44%		
In Italy			
Living in the North of Italy	41.87%		
Help from network	37.72%		
Unemployed	16.78%		
If you had the chance			
Would you migrate again to Italy?	62.80%		
Would you migrate to another country?	25.26%		
Would you stay put?	11.94%		
Intentions about the future			
Stay in Italy	34.60%		
Return to Ghana	26.47%		
Migrate to another country	5.71%		
Do not know	33.22%		
Nbr. of observations:	578		
Men	17.65%		
Women	82.35%		

Table 3.2: Push and Pull factors

Main reason for leaving Ghana		Main Reason for moving to Italy	
Economic Reasons	**90.32%**	**Economic Reasons**	**63.66%**
Could not find job	23.36	Job/income opport.	57.61
Income too low	22.32	Save money	3.29
Work unsatisfactory	8.65	Social security system	0.17
Seek job/income	19.9	Follow employer	0.17
Save money	4.5	Presigned job contract	2.42
Money for marriage	0.52		
Money for fam.expans	2.94	**Family reasons**	**24.92%**
Finance edu. childr.	0.35	Accomp.follow spouse	5.02
To follow employer	0.17	Relat./friends there	14.88
Improve living stand	7.61	Friendly folks there	3.98
		Educat.opportunities	0.87
Family reasons	**6.41%**	To get/just married	0.17
To get/just married	0.52		
Accomp/foll. spouse	3.81	**Other reasons**	**11.42%**
Escape fam.problems	1.04	Easy admission	3.63
To get education	1.04	Authorit. not strict	0.69
		Visited before	0.17
Other reasons	**3.12%**	Easy to enter illegaly	0.87
Fear of war/prosec.	0.35	Religious motivation	1.21
Adventure	1.38	Geograph.proximity	0.52
Dislike living in home country	0.35	By chance	0.52
Political reasons	0.35	Tourism	0.35
Buy working equipm.	0.17	Buy working equipm.	0.17
To know europe	0.52	Gener.attrac/like it	3.29

Table 3.3: Information before Migration

Did you have Information on the following issues?	
Job opportunities	58%
Level of wages	32%
Cost of Living	16%
Admission Regulation rules	19%
Did the information on the following issues played a role in the Migration Decision?	
Job opportunities	50%
Level of wages	26%
Cost of Living	11%
Admission Regulation rules	11%
Sources of Information about Italy	
Family or friends in the home country	28%
Family or friends in the host country	34%
Media	19%
Other (agencies, been in Italy before, school)	15%
Number of Sources of Information	
One source of Information	67%
Two sources of Information	24%
Three sources of Information	8%
Four sources of Information	1%

Nbr. Observations: 578

Table 3.4: Information on Job Opportunities in Italy and Source of Information

		Information on Job opportunities from friends in Home Country	
		No	Yes
Information on Job opportunities from friends in Host Country	No	74.82% 70.83%	25.18% 70.55%
	Yes	74.56% 29.17%	25.44% 29.45%

		Information on Job opportunities from Media	
		No	Yes
Information on Job opportunities from friends in Host Country	No	83.13% 70.83%	16.87% 70.41%
	Yes	82.84% 29.17%	17.16% 29.59%

		Information on Job opportunities from Media	
		No	Yes
Information on Job opportunities from friends in Home Country	No	85.42% 76.88%	14.58% 64.29%
	Yes	76.03% 23.13%	23.97% 35.71%

Table 3.5: First movers and Late movers

	Before 1991	After 1992	Difference
	(1)	(2)	(2)-(1)
Age at arrival in Italy	28%	27%	(-1.13)***
Married before migrating	9.28%	1.74%	(-7.54%)***
Secondary school / University	62.89%	63.76%	(0.87%)
Job before migrating	68.99%	72.16%	(-3.17)
HH member with a job (before migrating)	51.20%	50.87%	(-0.33)
HH owns land in HC (before migrating)	42.76%	29.97%	(-12.79)***
Any friend in Italy	56.36%	59.23%	(2.87)
Information from friends in DC about Job opportunities	23.02%	35.5%	(12.52)***
Information from friends in HC about Job opportunities	23.02%	27.53%	(4.51)
Information from Media about Job opportunities	19.16%	14.78%	(-4.38)

Table 3.6: Information from Incumbents and Migration Network

	Information from friends in DC	No Information from friends in DC	Difference	Sample
			(2)-(1)	
Secondary School/ University	66.86%	61.08%	(-5.78%)	All
Job Before Migrating	69.44%	73.37%	(3.93%)	All
Migration Network	47.01%	52.99%	(5.98%)	All
Help from Network	67.52%	63.28%	(-4.24%)	Restricted
Expect Help from Network	86.62%	76.84%	(-9.78%)***	Restricted

Restricted sample: Respondents with a migration network

Table 3.7: Evaluation of migration decision and Migration Networks

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent. Variable:			*Migrate again to Italy*			
	Coeff.	*Std. Error*	*Marginal*	*Coeff.*	*Std. Error*	*Marginal*
Log(Wage in Italy)	0.072***	(0.0202)	0.0268***	0.0659***	(0.0211)	0.0245***
Log(Wage in Ghana)	-0.6174	(0.4368)	-0.2302	-0.6708	(0.4344)	-0.249
Secondary School / University	0.1465	(0.2757)	0.055	0.1887	(0.2747)	0.0707
Nbr. of places of residence	-0.15***	(0.0523)	-0.0559***	-0.1538***	(0.0532)	-0.0571***
Family paid Migration Cost	0.3026**	(0.1296)	0.1114**	0.3257**	(0.1299)	0.1192**
No. Years in Italy	-0.0185	(0.0304)	-0.0069	-0.0178	(0.031)	-0.0066
Age	0.0238	(0.0163)	0.0089	0.0257	(0.0165)	0.0095
North	0.5228***	(0.1438)	0.1945***	0.5545***	(0.1480)	0.2053***
Married	0.4029**	(0.1883)	0.1517**	0.3721**	(0.1850)	0.1395**
Male	0.1311	(0.346)	0.0496	0.1587	(0.3478)	0.0599
Network size				0.1226***	(0.0450)	0.0455***
Network failure				-0.4206**	(0.2145)	-0.1628**
No. Obs.	578			578		
Estimation Method	Probit			Probit		
Pseudo R2	0.0922			0.1086		

Robust standard errors in parentheses

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

Table 3.8: Evaluation of Migration decision and Information

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent. Variable:			*Migrate again to Italy*			
	Coeff.	*Std. Error*	*Marginal*	*Coeff.*	*Std. Error*	*Marginal*
Log(Wage in Italy)	0.0593***	(0.0225)	0.0219***	0.0597***	(0.0223)	0.0221***
Log(Wage in Ghana)	-0.7299	(0.4492)	-0.2699	-0.7726*	(0.4464)	-0.2861*
Secondary School / University	0.1547	(0.2839)	0.0577	0.1821	(0.2827)	0.0681
Nbr. of places of residence	-0.1405**	(0.0550)	-0.052**	-0.1406**	(0.0553)	-0.0521**
Family paid Migration Cost	0.338**	(0.1336)	0.1231**	0.3325**	(0.1326)	0.1213**
Nbr. Years in Italy	-0.0071	(0.0318)	-0.0026	-0.0104	(0.0314)	-0.0039
Age	0.0243	(0.0173)	0.009	0.0254	(0.0171)	0.0094
North	0.5074***	(0.1517)	0.1874***	0.5041***	(0.1503)	0.1865***
Married	0.3833**	(0.1906)	0.1432**	0.4129**	(0.1915)	0.1546**
Male	0.3855	(0.361)	0.1475	0.3551	(0.3567)	0.1358
Network size	0.1016**	(0.0470)	0.0376**	0.1013**	(0.0458)	0.0375**
Network failure	-0.5104**	(0.2267)	-0.1979**	-0.4996**	(0.2222)	-0.1938**
Information from friends in DC	0.3768**	(0.1648)	0.1339**			
Information from friends in HC	-0.4286***	(0.1468)	-0.1631***			
Information from Media	-0.6689***	(0.1769)	-0.2588***			
Information from other sources	-.16985	(0.1975)	-0.0642			
Information from friends in DC played a role in the migration decision				0.3802**	(0.1636)	0.1343**
Information from friends in HC played a role in the migration decision				-0.3255**	(0.1550)	-0.1237**
Role of Information from Media played a role in the migration decision				-0.7564***	(0.1878)	-0.293***
Information from other sources played a role in the migration decision				-0.1563	(0.2132)	-0.0591
Nbr. Obs.	578			578		
Estimation Method	Probit			Probit		
Pseudo R2	0.1589			0.1531		

Robust standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 3.9: Evaluation of Migration decision and Information - Non monetary measures

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent. Variable:			*Migrate again to Italy*			
	Coeff.	*Std. Error*	*Marginal*	*Coeff.*	*Std. Error*	*Marginal*
Unemployed/Bad job	-0.5998***	(0.1747)	-0.2311***	-0.5735***	(0.1748)	-0.221***
HH member with a job (before migrating)	-0.3195**	(0.1343)	-0.1171**	-0.3482***	(0.1340)	-0.1277***
Job before migrating	-0.121	(0.1508)	-0.0441	-0.1107	(0.1497)	-0.0405
Secondary School / University	-0.2175	(0.1421)	-0.0788	-0.2153	(0.1421)	-0.0781
Nbr. of places of residence	-0.1461**	(0.0578)	-0.0538**	-0.15**	(0.0584)	-0.0553**
Family paid Migration Cost	0.3514***	(0.1362)	0.1273***	0.3577***	(0.1353)	0.1298***
Nbr. Years in Italy	0.0073	(0.0317)	0.0027	0.0034	(0.0315)	0.0012
Age	0.0074	(0.014)	0.0027	0.0073	(0.0139)	0.0027
North	0.4182***	(0.1540)	0.1541***	0.4298***	(0.1528)	0.1586***
Married	0.1426	(0.1414)	0.0528	0.1633	(0.142)	0.0606
Male	-0.0595	(0.1877)	-0.0217	-0.1307	(0.1843)	-0.0473
Network size	0.1223**	(0.0485)	0.045**	0.1225***	(0.0470)	0.0452***
Network failure	-0.5911***	(0.2165)	-0.2293***	-0.5768***	(0.2139)	-0.2238***
Information from friends in DC	0.4966***	(0.1631)	0.1729***			
Information from friends in HC	-0.3682**	(0.1529)	-0.1393**			
Information from Media	-0.765***	(0.1741)	(0.0588)**			
Information from other sources	-0.3179	(0.1947)	-0.1215			
Information from friends in DC played a role in the migration decision				0.5023***	(0.1625)	0.1733***
Information from friends in HC played a role in the migration decision				-0.2726*	(0.1602)	-0.103*
Information from Media played a role in the migration decision				-0.8541***	(0.1912)	-0.3295***
Information from Other sources played a role in the migration decision				-0.2819	(0.2092)	-0.1076
Nbr. Obs.	578			578		
Estimation Method	Probit			Probit		
Pseudo R2	0.1679			0.1617		

Robust standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 3.10: Evaluation of Migration decision and Information - Informed migrants only

Dependent. Variable:	(1)	(2)	(3)	(4)	(5)	(6)
			Migrate again to Italy			
	Coeff.		*Marginal*	*Coeff.*	*Std. Error*	*Marginal*
		Std. Error				
Network size	0.1298**	(0.0592)	0.0489	0.14**	(0.0569)	0.0529**
Network failure	-0.6353**	(0.2616)	-0.2479	-0.5983**	(0.2553)	-0.2338**
Information from friends in DC	0.6205***	(0.2210)	0.2305***			
Information from friends in HC	-0.3722*	(0.1969)	-0.1403*			
Information from Media	-0.7052***	(0.1979)	-0.2712*			
Information from friends in DC played a role in the migration decision				0.5877***	(0.1955)	0.2161***
Information from friends in HC played a role in the migration decision				-0.2533	(0.1841)	-0.0962
Information from Media played a role in the migration decision				-0.7983***	(0.2082)	-0.3079***

Wald Test	H0:	P-value	H0:	P-value
	Info DC-Info HC=0	0.0000	RoleInfo DC-Role Info HC=0	0.0008
	Info DC-Info Media=0	0.0000	RoleInfoDC-RoleInfoMedia=0	0.0000
	Info HC-Info Media=0	0.1938	RoleInfoHC-RoleInfoMedia=0	0.0487

Nbr. Obs.	336	336
Estimation Method	Probit	Probit
Pseudo R2	0.2670	0.2561

All regressions include the following variables: Unemployed/Bad job, HH member with a job before migrating, Secondary/University, Nbr. of places or residence, Family paid the migration cost, Nbr. of years in Italy, Age, North, Married, Male.

Robust standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

Figure 1: Year of Arrival