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Special Issue on Migration, Remittances, and Trade Agreements

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Special Issue on Migration, Remittances, and Trade Agreements: An Introduction

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The *Journal of Business Strategies* published a special issue on migration and remittances in Spring 2009 with six articles selected from the papers presented at the Conference on Regional Trade Agreements, Migration, and Remittances with Special Focus on CAFTA and Latin America held at the College of Business Administration, Sam Houston State University, in April 2008. The current special issue is a continuation of that effort and includes five more articles selected from the pool of papers presented at the conference. In addition to topics related to migration and remittances, this issue also includes articles on regional trade agreements (RTAs).

While migration of people across natural and man-made borders has remained a powerful force that contributes to the progress of human civilization, remittances — the transfers of money by migrants to family and friends left behind in their respective home countries — have been recognized as "the most tangible and . . . the least controversial link between migration and development, having the potential to contribute significantly to poverty reduction and achievement of other UN Millennium Development Goals" (Irving et al, 2010). Although new migration flows fell during 2008-09 due to the global economic crisis, existing migrants were not returning even though the employment prospects have been bleak in many destination countries. In 2008, officially recorded remittances to developing countries reached a higher-than-expected level of $338 billion and it represented a growth of about 17 percent from $289 billion in 2007.[1] While South and East Asia witnessed a stronger-than-expected growth in remittance flows during 2008-09, Latin America and the Caribbean, Middle East, and North Africa experienced larger-than-expected declines.[2]

In addition to migration and remittances, greater trade liberalization, particularly in developing countries, has become another hallmark of the current wave of globalization. However, the development of a multilateral trading system based on global free trade under the aegis of the General Agreements on Trade and Tariff (GATT)/World Trade Organization (WTO) has been extremely slow mainly due to the complexity of multilateral negotiations. This has given way to an unprecedented proliferation of Regional Trade Agreements (RTAs), which have become a prominent feature of the Multilateral Trading System (MTS).[3] Almost every country is a part of one or more RTAs. Some 462 such agreements have been notified to the GATT/WTO up to February 2010 and 271 of them were in force. This trend is likely

to continue as many more RTAs are currently under negotiations. Of these RTAs, Free Trade Agreements (FTAs) and partial scope agreements account for 90 percent, while customs unions (CUs) account for 10 percent.[4]

The rise of RTAs raises the time-honored question of whether these agreements help or hinder global trade liberalization. The classic analysis of the "trade diversion effect" (diversion of trade from a more efficient exporter towards a less efficient one by the formation of an FTA) by Jacob Viner (Viner 1950) was later extended to a full range of theoretically plausible effects of RTAs. The expositions on the implications of RTAs for global free trade are collectively known as the "stumbling bloc" or "building bloc" debate.[5] In this debate, RTAs are "stumbling blocs" if they prevent or slow multilateral trade liberalization, while they are "building blocs" if they accelerate or at least do not hinder multilateralism. Numerous mechanisms have been presented in the literature to suggest that one or the other position is likely. The classic "trade diversion effect" as described above and the "trade creation effect" (more trade with the members of the RTA) are two such mechanisms extensively discussed in the literature.

Migration and Remittances

The first two articles in this special issue deal with topics related to international migration and remittances. While Borraz, Pozo, and Rossi examine the effect of migration on the subjective well-being of the family left behind by the migrants using data from Cuenca in Ecuador, Mamun and Nath analyze various aspects of workers' migration from Bangladesh and examine the economic impact of remittances received from these migrant workers.

International Migration and Happiness

Although the socio-economic effects of migration on the migrant-sending households have been extensively studied in the migration literature, the subjective well-being — the level of happiness — of the family members left behind by the migrant has not received much attention. One formidable issue is how to measure happiness. Recently, a few studies on this topic — based on survey data — have appeared in the literature.[6] The article by Borraz, Pozo and Rossi belongs to this strand of the literature and aptly complements Cárdenas et al (2009). Using data on subjective well-being and migration of family members in Cuenca, one of the Ecuador's largest cities, they examine the impact of migration on the happiness of the family left behind. They find that although the heads of migrant-sending households

seem to be less happy, after controlling for several socio-economic characteristics, they are no different from their counterparts of non-migrant households in their stated levels of happiness. That is, households that have experienced migration of their family members express the same level of happiness as those households that have no migrant members. The authors suggest that the remittances received by the households from the migrant members offset the decrease in their happiness level.

Workers' Migration and Remittances in Bangladesh

In the article by Mamun and Nath, the attention is directed to issues related to migration and remittances in Bangladesh, one of the poorest and most densely populated countries in the world. Bangladesh with a size of 1.5 percent of the U.S. in area and less than 1 percent in GDP has a population of more than 150 million, about half the size of the U.S. population. Constrained in many ways, this country has very few options left in its effort to achieve economic growth and development. No wonder that encouraging international migration to more prosperous countries has been a strategic policy tool for the government to contain the pressures in its ever-exploding labor market. Over a period of more than three decades since the mid-1970s, Bangladesh has sent more than 6.7 million workers to over 140 countries. Most of these workers temporarily migrate to work in Middle East and Southeast Asia. Note that if the people who migrated legally or illegally to other countries for permanent settlement were counted, the total number of Bangladeshi migrants would be much higher.

The mass movement of temporary migrant workers has not only eased some pressures on the over-burdened labor market in Bangladesh, but also the remittance transfers received from these migrant workers have significant economic impact in this country. These remittance transfers have reached a phenomenal level of over 10 billion US dollars in 2009, approximately 12 percent of GDP in Bangladesh. This paper analyzes trends and various other aspects of workers' migration and remittances in Bangladesh. It further discusses the micro and macroeconomic impacts of remittances. While most remittance transfers have been used by migrant-sending households for consumption, there is evidence to show that these transfers have helped reduce poverty in Bangladesh. The analysis presented in this paper also demonstrates that these remittances have significant impacts at the macroeconomic level. The empirical analysis indicates that these transfers have positive impact on the growth of industrial production and exports.

Regional Free Trade Agreements

The last three articles focus on issues related to RTAs. The first two articles theoretically explore whether RTAs are the "building blocs" or the "stumbling blocs" for achieving the goal of global free trade under a multilateral trade arrangement. The last article empirically examines whether RTAs lead to more trade or less trade (that is, to a "trade creation effect" or a "trade diversion effect") and how they contribute to economic growth in 17 Latin American countries.

Politics and Economics of Free Trade Agreements

The article by Trupkin uses a political-economy framework to analyze whether regional free trade agreements are building blocs or stumbling blocs for multilateral trade liberalization. The paper builds on a framework originally introduced by Grossman and Helpman (995). The aim of their model was to explain the viability of FTAs between two countries when special interest groups — the lobbies — make political campaign contributions to influence trade policies. The author extends the model to a three-country setting to analyze whether FTAs are "building blocs" or "stumbling blocs." This paper uses a specific example to show that under certain conditions FTAs are only partial "building blocs" for global trade liberalization.

Implications of a South-South Customs Union

Following the failure of multilateral trade negotiations at the Cancun meeting and the Doha Round of the WTO, developing countries have pursued an alternative in so-called "south-south" trade agreements. Since these agreements lead to trade diversion from efficient north (developed) countries to less efficient south (developing) partners, there have been widespread concerns regarding their welfare implications. Using a three country oligopoly model of trade, the article by Nath and Yildiz first examines statically the implications of a south-south CU on the pattern of tariffs and welfare. The authors find that south countries always have incentives to form a CU that reduces the welfare of the north country. Moreover, when south firms are sufficiently inefficient relative to north firms, a south-south CU leads to a large trade diversion effect and reduces world welfare. They further show that, in a repeated interaction model, free trade is less likely to be sustainable under the south-south CU relative to no agreement.

Implications of Trade Agreements in Latin America

Using data for a sample of 17 Latin American countries for the period 1950-2004, Barboza and Trejos examine the effects of Preferential Trade Agreements (PTAs) and GATT/WTO membership on economic growth. Their results indicate that the proliferation of bilateral and multilateral regional and extra regional trade agreements has not led to faster economic growth. However, they find that PTAs and WTO membership have a weak positive effect on trade openness. Furthermore, after controlling for capital, labor force, and trade openness, PTAs and WTO membership do not have any direct effect on economic growth. These results are robust to both static and dynamic model specifications.

Notes

1. See Irving et al. (2010)

2. See Ratha et al (2009).

3. RTAs are preferential trade agreements (PTAs) that may take one of the following forms:

    1. A Free Trade Agreement (FTA) is an agreement between two or more countries that have eliminated tariffs and other trade restrictions on most (if not all) goods and services traded between them.

    2. A Customs Union (CU) is a group of two or more countries that have an FTA and that also apply a common external tariff on goods and services from non-members.

    3. A regional economic integration agreement is the next step: it can include the free movement of capital as well as goods and services, a common currency, and a common economic policy.

4. See WTO (2010).

5. For a detailed discussion on the debate, see Panagariya (1999) or Bhagwati(2008).

6 Cárdenas et al. (2009), published in this journal is an example.

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Biographical Sketch of Author

Hiranya K. Nath is an Associate Professor of Economics at Sam Houston State University. He has published on inflation and relative price behavior, the growth of transition economies of Central and Eastern Europe, the growth of Bangladesh, and information economy in refereed journals including *Applied Economics, Applied Economics Letters, Applied Financial Economics Letters, California Management Review, Comparative Economic Studies, Economics Letters, Journal of International Trade & Economic Development, Journal of Macroeconomics, Journal of Money, Credit and Banking*, and *Review of Development Economics*. He earned his Ph.D. in Economics from Southern Methodist University, Dallas (TX).

And What About the Family Back Home? International Migration and Happiness in Cuenca, Ecuador

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Abstract

In this study we use data on subjective well being and migration of family members in Cuenca, one of Ecuador's largest cities, to examine the impact of migration on the happiness of the family left behind. While a cursory examination of the data suggests that the heads of households that have experienced the migration of one or more family members are less happy, a more careful analysis reveals otherwise. Households that have been impacted by migration express equal levels of happiness as those households that have not been affected by migration. One plausible explanation for our finding is that the remittances that households receive following the migration of loved ones counteract the downsides to family emigration.

Introduction

International migration can be motivated by a number of factors. Some migrate in order to escape dire poverty. Others go into exile in search of religious or political freedoms. Some move to invest in education, others to join relatives abroad, and still others in pursuit of adventure and new opportunities. While a great deal of research has analyzed the short-run and long-run outcomes for those who move to new areas (e.g. Borjas, 2002; Chiswick, 2002; Smith, 2003; Card, 2005), in this paper we turn our focus to the family left behind. In particular, we consider whether international migration of one or more family members serves to increase or decrease the level of "happiness" of household members who remain in the home community.

Understanding how migration affects migrants and their families is of considerable interest given that migration will likely touch increasing numbers of individuals in the world. First, according to demographic information, the incidence of migration has been rising. In 1970, about 2.2 percent of the world's population lived

in a country other than their country of birth. In contrast, by 2005, the foreign born accounted for 3 percent of the world's population.[2]

Second, emigration impacts more than those moving to another country. Legal, cultural, and monetary barriers to migration often make it difficult for whole families to migrate. The incidence of migration-impacted households can therefore easily change with public policy which ultimately accentuates family separations and dislocations. For example, Massey (2006) has noted that increased enforcement at the US/Mexico border — implemented to stem illegal immigration — has had the unintended effect of extending the stay of unauthorized immigrants who would normally periodically return home. Longer stays by unauthorized immigrant are likely to lead to longer-lasting and permanent family separations. A third reason for expecting migration to touch larger portions of the world population stems from policy shifts in immigration legislation toward preferences for skilled labor migration at the expense of family reunification. If legislation continues to be developed along these lines, it follows that a larger circle of individuals will be affected by migration due to longer-run family separations. Finally, rapid technological progress of the sort observed in the more recent decades is likely to continue, further reducing transportation and communication costs, easing travel, facilitating international migration and therefore increasing its incidence.[3]

Given the expectation of greater family dislocations via migration, what are our priors on the impact of migration on happiness? We hypothesize that migration reduces happiness levels of the family left behind. The emigration of a household member is likely to directly cause disruptions in the household since the absent household member may have been contributing to the household via market or home production. Thus, in addition to discomfort stemming from the absence of loved ones, household and monetary responsibilities now need to be assumed by other family members. The reallocation of household chores and market work is likely to be costly for the remaining family members, reducing happiness levels. It is also conceivable, however, that migration positively affects happiness levels. For example, as suggested and described by Cárdenas, Di Marco, and Sorkin (2009), the migration of family may increase the spatial dispersion of income sources. This, in turn, may raise the subjective well-being of the family because of the "insurance" this dispersion may buy, which, in effect, reduces the income vulnerabilities of the family.

In this paper we seek to examine the impact of migration on the happiness of the family left behind by exploiting information contained in the *Discrimination and Economic Outcomes Survey* undertaken in Ecuador in 2006. The survey contains information from 665 households: 480 in Cuenca and 185 in San Fernando. In this

paper, we only include households residing in Cuenca because the San Fernando sample contains too few non-migrant households from which to draw the comparisons. Cuenca is the third largest city in Ecuador with nearly a half million inhabitants while San Fernando is a very small town with approximately 3,000 inhabitants.[4] If the household does claim a migrant member, limited information on that migration is collected. Furthermore, a question that assesses the subjective well-being or "happiness" of the survey respondent is asked

Despite its geographic limitations, Cuenca is of interest to migration scholars owing to its long history of international migration to the United States. This migration was initiated shortly after WWII on account of the decline in use and therefore export demand for Panama hats (which despite the name, were produced in Cuenca and its surrounding areas in Ecuador). The hat manufactures in Cuenca had business contacts in New York, and when faced with declines in the traditional business, exploited those networks to migrate to the New York area. The subsequent development of those migration networks has produced significant migratory flows to the United States from the region (Gatton, 2005).

Literature and Measurement Concerns

Our intent is to try and measure whether international migration has impacted subjective well-being or happiness for the family remaining in the home community using the survey referred to above.[5] Before outlining the methodology we use to link migration to happiness levels, it is appropriate to ask as to what extent is it possible to discern "happiness" from surveys such as the one in question? Di Tella and MacCulloch (2005) note that other social scientists including psychologists have relied upon happiness data much like the data included in the Discrimination and Economic Outcomes Survey that we are working with. They claim that, ". . . well-being data pass what psychologists sometimes call validation exercises." Pavot (1991), for example, finds that respondents who report that they are very happy tend to smile more, an act that arguably is correlated with true internal happiness. Layard (2005) further rationalizes the use of happiness data by noting research in neuroscience (Davidson, 2000) which has found that different regions in the brain are associated with positive and negative effects. Thus, when people describe their feelings there is some biological basis and their claims are not purely subjective. Furthermore, self-reported happiness is correlated with others' assessments of happiness. As such, many argue that happiness can be measured and can be compared between individuals and over time.

We measure the respondent's well-being by considering whether he or she responded that he or she was "very satisfied," "fairly satisfied," "not satisfied," or "very unsatisfied" with his or her life.[6]

Table 1 presents some basic information on household heads in Cuenca along with their self described level of happiness as reported in the survey database. About 68 percent of household (29 + 39) report that they are satisfied or very satisfied with their lives. We sum these two categories and classify these households as "happy." In contrast, we classify 32 percent of households as "not happy," as they claim to be either "not very satisfied" (29 percent) or "not at all satisfied" (3 percent) with their lives.

Table 1
Self-reported happiness levels of household heads in Cuenca, Ecuador

Level of Satisfaction with Life	N	Percent
Very Satisfied	138	28.9
Satisfied	186	38.9
Not Very Satisfied	138	28.9
Not at all Satisfied	15	3.1

The literature on happiness suggests that a number of demographic, cultural, and economic factors play a role in individual's happiness. A review of the empirical literature appears to concur with common expectations regarding the relationship between personal variables and happiness. For example, separated individuals and divorced individuals are found to be less happy (Clark & Oswald, 1994; Blanchard & Oswald, 2000). Happiness decreases with age but eventually rises as individuals get older. In contrast, education and happiness are found to be inverse u-shaped. More education increases happiness, but education can be "too much of a good thing," since beyond a certain point, additional levels of education are found to contribute negatively to happiness levels (Hartlog & Oosterbeek, 1997).

Other variables are found to have less obvious and sometimes even counterintuitive impacts on happiness. For example, absolute income levels do not seem to be important as determinants of happiness (Easterlin, 1974; Blanchflower & Oswald, 2000; Rayo & Becker, 2007). Relative income or wage standing, instead, appear to affect happiness levels (Frank, 1985; Easterlin, 2001, Miles & Rossi, 2007). Interestingly, self-employment is found to increase happiness for individuals in developed economies, while having the opposite effect for individuals residing in developing economies (Graham & Pettinato, 2001).

A number of other variables have been found to affect happiness, but with less robust findings. For example, while it has been reported that women are happier than men, the reported happiness among women is found to be declining over time. And while religious denomination does not appear to impact happiness, religiosity, measured by attendance at religious ceremonies, seems to be correlated with greater levels of happiness (Blanchflower & Oswald, 2000).

Our intent is to contribute to this literature by assessing the impact of migration on happiness using the data from Cuenca, Ecuador. In an earlier publication, Cárdenas et al. (2009) explore this relationship using the Gallup World Poll survey and Latinobarómetro to analyze households from up to 20 Latin American and Caribbean countries. To this end, they estimate an equation of the following form:

$$H_i = \alpha + \beta F_i + \delta M_i + \varepsilon_i \qquad (1)$$

and attempt to explain the happiness of respondent i (H_i) which is presumed to depend on a vector of variables describing the characteristics (F_i) of the household and respondent. The model is augmented with a migration related variable M_i — for example, a dummy variable specifying whether or not the household claims that one of its members has emigrated. Of interest is the estimated value for δ, the coefficient on the migration variable. The estimated value for δ along with information on its statistical significance is used to determine whether migration reduces, increases, or leaves unchanged the happiness of a family member left behind.

While (1) may seem a reasonable specification, we note that it may not be appropriate if one cannot justify that all right hand side variables in equation (1) are exogenous — that there is no correlation between the right hand side variables and the error term. This proves problematic for several reasons. Consider, for example, a very simple migration variable — a dummy variable assuming the value "1" for households that claim that one of its members is a migrant and "0" otherwise. Correlation between the migration dummy variable and the error term might very well exist on account of reverse causality. While we are presuming that migration impacts happiness (e.g., family remaining behind miss the migrant and perhaps their former contributions), it is also conceivable that happiness affects migration. For example, a very unhappy household head may "drive family away."

In addition to endogeneity originating from reverse causality, unobserved heterogeneity may also play a role. Migrant households are not likely to be randomly selected from the population, and it may be difficult to observe and control for that selection.[7] For example, it may be that migrants tend to originate from households

willing to indulge in risk-taking behavior. But risk attitudes may also play a role in determining happiness. If we cannot control for risk attitudes on the right hand side of (1), the migration variable and error term will be correlated and our inferences regarding migration and happiness will be biased.

Non-migration regressors in equation (1) may also suffer from endogeneity. One obvious candidate is income. Positive work attitudes may very well be a factor in determining income, but work attitudes are also likely to affect happiness. If we do not observe and, therefore, control for work attitudes, this will be reflected in the error term which will now be correlated with income, biasing the coefficient on income and incorrectly assessing income's impact on happiness.

Cárdenas et al (2009) conclude that, overall, households are made better off by migration. But they also note that household's subjective well-being appears to vary according to their vulnerabilities. Households that are nutritionally vulnerable are made worse-off by migration. While these results are interesting and have made in-roads into the issue of migration's impact on happiness level, we argue, as do Cárdenas et al. (2009), that endogeneity has not been accounted for in the above methodology, thus, bringing into question the final conclusions.

Our intent is to analyze migration's impact on happiness using the data from Cuenca, Ecuador, while accounting for the endogeneity problem discussed above. A common solution for endogeneity is to find instruments for the endogenous variables in question. By finding variables that are correlated with the endogenous right hand side variable yet not related to the dependent variable, we can purge the effects of endogeneity and thereby obtain consistent estimates that reliably describe how the right hand side variables affect happiness. In many cases, however, instruments are difficult to obtain. Furthermore, once we find what may appear to be a reasonable candidate, diagnostic tests of its suitability are sometimes of questionable reliability, making it difficult to justify its use. While we might venture to use instrumental variables to correct for one endogenous regressor, we feel less confident about finding and justifying instruments for all the regressors in equation (1) that are likely to be endogenous. For this reason, we seek an alternative technique to assess the impact of migration or migration related variables on happiness.

Methodology

The gold standard for assessing causality from variable "M" (for example, the migration of household members) to outcome variable "H" (in our case happiness) is to perform a randomized experiment. In a randomized experiment subjects

are chosen at random from the population. We refer to the random sample as the experimental or treatment group. Since these subjects have been selected at random, they must be, on average, identical in characteristics to the "control" group. The experimental group is then "treated" with migration. Next, we compare outcomes (e.g. happiness) in the experimental group with the control group. Any differences observed in the two can be attributed to the treatment since the two groups were identical before treatment. In this manner we avoid the selection bias problem, permitting us to assess causality from treatment M (having a migrant family member) to outcome H (happiness).

Unfortunately, controlled random experiments are expensive and less likely to be undertaken in studies of international migration.[8] As a substitute, we employ a matching technique — we in effect find a "control group" that matches the "experimental group" — the set of families who have been touched by migration. That is, we simulate a randomized experiment by finding a control group among those households who are not migrant households. We work backwards in comparison to a randomized experiment. We are presented with a treated group. Our job is to find a control group that matches the treated group and use the "matched control" group to derive comparisons with the "treated" group. In this way we can discern causality from migration to happiness and thereby make inferences about the effect of migration on happiness. While such a technique limits our conclusions (we do not get any information concerning how the other variables — e.g., income, age, education — affect happiness), potential endogeneity on the part of these other variables will not compromise our conclusions about migration on happiness. In this way we eliminate selection bias that exists with respect to the comparisons of treated and non-treated groups and assess causality from "M" to "H" — in our case, from migration to happiness.

We use propensity score matching (PSM) to obtain an artificially generated control group that is similar to the treatment group in every aspect except that the persons in the control group do not have a family member abroad. Rosenbaun and Rubin (1983) show that it is not necessary to perform the match with respect to the vector of personal characteristics. It is enough to match the propensity score, that is, the predicted probability of treatment receipt (migration). We assume that treatment participation depends on a vector of observable variables X. In order to obtain the artificially created control group, one needs to first obtain the propensity score for each observation that "orders" observations along a set of observable variables. For each treated observation we find the non-treated observation that is closest to the treated observations to serve as the corresponding control observation. That is, we obtain

predicted probabilities from a probit that predicts migration and then use these predicted probabilities to match non-migrant households to migrant households.

Typically, for each treated observation, PSM selects one similar non-treated observation and adds this observation to the control group. In our case, we use the K-nearest neighbor matching method (setting K equal to 1 or more) to select the matched control group. Setting K to (say) 1 or 2 controls involves a tradeoff. Bias will be smallest with one matching observation (with K=1), but we can reduce the variance if we choose K to be larger and hence choose more matches per treated observation. As we explain in more detail below, we choose K based on the size of the available control group. The actual algorithm employed to match the potential control observations to the treated observation is PSMATCH2, version 3.0.0 by Leuven and Sianesi (2003).

Hypotheses and Data

Our prior is that migration reduces happiness levels for the family left behind. This prior is based on the notion that migration, and in particular international migration, disrupts the family. Mothers and fathers long for their children and children miss their siblings and parents. Grandparents regret missing grandchildren's milestones. Nieces and nephews yearn for advice from a favorite aunt. Disruptions to the family, however, may extend beyond "missing the company" of a loved one. For example, family chores that had previously been undertaken by the migrant need to be assumed by remaining family members. The monetary resources of the household may also be strained owing to the possibility that the household financed the migration. Or it may be that the previous income contributions of the now absent household member are missed.

In order to get a preliminary sense of the impact of migration on happiness, we tabulate the proportion of "migrant household" who report that they are "happy" relative to non-migrant households. We define the head to be happy if he or she reports that he or she is very satisfied or somewhat satisfied with life. These simple descriptive statistics are presented in Table 2. In the top portion of the table we divide households into those that claim to have at least one migrant member and those with no migrants belonging to the household. Migrant households appear less happy in the aggregate as the percent that claim to be happy is significantly less at the 1% level or better. The difference in percentage of happy households is 13 with a standard error of 4.9. If we restrict the definition of a migrant household to households claiming to have a "close" family member abroad — a spouse, parent, or child — we

find again that families with "close" family migrant members are also statistically less happy than the families with no migrants (or only distant family as migrants) with a 12 percentage point difference in happiness and a standard error of 5.6.

Table 2
Happiness and Migration

	N	% Happy	Difference	SE	t-value
No migrants in household	115	78			
			13	4.9	2.74***
Household has one or more distant or close family members who is a migrant	362	65			
No close migrants in household	396	70			
			12	5.6	2.10**
Family has one or more close family members who is a migrant	81	58			

Note: Happy is defined as reporting to be very satisfied or satisfied with life.

While the results of Table 2 suggest that migration of family members does impact the household negatively by reducing levels of happiness, such a conclusion is not necessarily warranted. Households that have migrant member could be inherently less happy and that would mean that there is no causal relationship from migration to happiness. Hence, we move on to more conclusively determine whether migration causes unhappiness by using the matching method described earlier.

Results

For our "migration experiment" we first estimate a probit model to explain migration using the full sample. The probit model is used to obtain propensity scores in order to match controls to treated observations. The model is as follows:

$$M_i = \alpha_1 + \beta^M F_i + \varepsilon_i \qquad (2)$$

where M_i is a dummy variable assuming the value "1" if the head of household i claims at least one parent, child, or spouse living abroad. The vector F_i represents

the set of head and household characteristics which predicts households' status with respect to migration. We include in this vector the head's age and its square (to allow for non-linear life-cycle effects), marital status of the head, his or her schooling, gender, and race/ethnicity. We restrict the probit to these right hand side variables because they are most likely to satisfy the exogeneity condition — that they predict migration but that migration does not, in turn, influence these variables. For example, while race may help predict which households send migrants abroad, migration of a family member does not change the race of the family. In contrast, while household income may predict migration, we cannot include household income in the probit because it is likely to be influenced, should a family member emigrate. With this equation we estimate the probability that the household is a "migrant household," meaning that the head claims to have a family member who is currently an international migrant.

At this juncture, a comment is in order regarding the definition of the dependent variable, "migrant household." We limit migrant households to household heads claiming to have a spouse, parent, or child living abroad. In essence, we are limiting our definition of migrant household to those with "close" family abroad. Undoubtedly, "close" is rather arbitrarily defined. We include parents but not siblings. However, given the pervasiveness of migration in this community (75% of all households surveyed claim to have a relative abroad) and given that all respondents are at least 18 years old, we felt that restricting "close family members" to parents, children, and spouses is justifiable by way of reasoning that there is a qualitative difference between having, say, a spouse abroad versus a cousin abroad. Using this narrower definition, 16 percent of households in Cuenca are migrant households.

Some simple descriptive statistics summarizing the sample variables used for this analysis are displayed in the appendix. The average household head in this survey is 41 years of age and households on average consist of 4.3 members. Sixty-three percent of household heads claim to be married (or partnered), 45 percent work full time, and 44 percent are self employed. Education is coded into 7 categories with the data revealing that on average household heads in this survey have some secondary schooling. Per capita income in this community averages US $1,637. Most household heads are mestizo and 11 percent are white.

The results of estimation of equation (2), the probit equation used to obtain predicted probabilities of being a migrant household, is displayed in Table 3 and indicates that older heads are less likely to claim a migrant household member. In this population, migration selects negatively on schooling. An additional step in the 7

category schooling variable reduces the likelihood of having a close family member abroad by 4 percentage points at the mean.

Table 3

Probit to Predict that the Respondent has a close family migrant member.

(Dependent variable: Respondent claims that a child, parent, or spouse is living abroad)

	coefficient	se	z	Marginal effect
constant	0.8386	0.5520	1.52	—
Age	-0.0630 ***	0.0231	-2.62	-0.0143
Age squared	0.0007 ***	0.0003	3.08	0.0002
Schooling	-0.1741***	0.0532	-3.27	-0.0397
Married	-0.2024	0.1600	-1.26	-0.0476
Female	0.1586	0.1615	0.98	0.0351
White	0.0351	0.2287	0.15	0.0081
Indigenous or Black	-0.8386	0.5341	-1.57	-0.1219
Chi^2 (prob) 38.35 (0.0000). Sample size = 443				
Observed P (predicted P) 0.17 (0.15)				

Notes: * signifies statistically different from 0 at the 10% level or better, ** signifies statistically different from 0 at the 5% level or better, *** signifies statistically different from 0 at the 1 level or better. N=462

The propensity score is used to rank all observations, both selected and not selected, into migration. These ranking are used to "match" observations (non-migrant observations) to serve as controls for the migrant sample. Given that we have 78 "close migrant households" and 384 "non-migrant households,"[9] we allow for 2 control observations per treated observation; that is we use K = 2 neighbor matching.[10] We now use the set of matched controls to make comparisons with the treated group. The matched controls are presumably an appropriate comparison group to the treated except for the fact that they are not treated. Hence, we can infer causality from the treatment by simply comparing the mean values for the treated group to the mean values for the matched controls and thereby attribute differences in the two to the treatment.

Of particular concern in any study using non-experimental data is whether indeed the control group serves as a good comparison for the treated group. Can we "after the fact" demonstrate that the control group resembles the treated group in the pre-treatment time period? How accurate is our matching? Do the matched controls truely serve as counterfactuals to the treated group? To gain some insights into the comparability of the treated groups with the matched controls we report on a series

of descriptive statistics for the groups. These are i) the treated group — migrant households; ii) the untreated group — non-migrant households; iii) the matched controls — a subset of the untreated non-migrant households — those with propensity scores closest to the scores of the treated group. The results in Table 4 reveal that in many cases there are significant differences in mean values for the treated and the untreated group. Those differences, however, get smaller and all of the significant differences disappear between the treated and matched controls. Take, for example, the case of schooling. The non-treated group has almost one year more of schooling ($\bar{X}_T - \bar{X}_{NT} = -0.82$) and this difference is statistically different from zero (see Table 4, column 4). But this difference gets smaller ($\bar{X}_T - \bar{X}_{MC} = 0.09$) and its significance disappears when we compare the treated with the matched controls (Table 4, column 5).

Table 4
Means and Proportions for the Treated, the Not Treated and the Matched Control Groups — Migration Treatment

	Treated $\bar{X}_T$	Not Treated $\bar{X}_{NT}$	Matched Control $\bar{X}_{MC}$	$(\bar{X}_T-\bar{X}_{NT})$	$(\bar{X}_T-\bar{X}_{MC})$
Age	46.74	40.02	47.02	6.72***	-0.28
Schooling	3.86	4.68	3.77	-0.82***	0.09
Married	0.59	0.64	0.65	-0.05	-0.06
Per capita income	1385	1743	1699	-358	-314
Fulltime	0.30	0.48	0.36	-0.18***	-0.06
Household Size	4.31	4.28	3.81	0.03	-0.50
Female	0.68	0.62	0.66	0.06	0.02
White	0.14	0.11	0.18	0.03	-0.04
Indigenous or Black	0.01	0.04	0.01	-0.03	0.00
Happiness	0.59	0.72	0.61	-0.12**	-0.02

Notes: * signifies statistically different from 0 at the 10% level or better, ** signifies statistically different from 0 at the 5% level or better, *** signifies statistically different from 0 at the 1% level or better.

Note that while some of the variables displayed in Table 4 correspond with the variables used to undertake the "matching" (see variables included in the probit equation), not all were included in the probit model. That is, some of the descriptive statistics in Table 2 indicate that the two groups match well along dimensions not even directly considered in the matching algorithm. For example, *fulltime (employment)* is not included in the probit model used to select the matched controls. None-

theless, before matching, the difference in proportion of heads working fulltime was -0.18 and is statistically different from zero at the 1 percent level or better. After matching, the difference is only -0.06 and statistically indistinguishable from zero.

Of particular interest to us is the test of differences in mean happiness levels for respondents claiming to be in migrant households versus matched non-migrant households. That is,

$$H_0: \mu^H_T - \mu^H_{MC} = 0 \quad (3)$$

against the alternative

$$H_1: \mu^H_T - \mu^H_{MC} \neq 0 \quad (4)$$

Results for this test are displayed in the final row of Table 4. If we simply compare migrant households to all the other non-migrant households, there is a statistically significant difference in the proportion who claim to be happy. Non-migrant households, on average, are happier. But if we instead compare the migrant households to matched controls, the difference disappears. Families with close migrants are no less or more happy than families without close migrants. Assuming that our matching procedure has successfully identified a counterfactual — a set of households similar in all characteristics with the non-migrant households with the exception of claiming to have an emigrant family member — the results indicate that the two samples, on average, experience the same level of happiness.

It is interesting that a straight comparison of households by migration status (a statistically incorrect and naïve comparison) would yield us a very different conclusion. The naïve comparison suggests that migration reduces happiness while the more comparable sample suggests otherwise, that on average the level of happiness for migrant households and non-migrant households are equal.

Discussion

Our expectation was that the migration of a family member would reduce happiness levels of the family left behind. Simple descriptive statistics regarding subjective happiness levels of the heads of households that have experienced migration of a family member and of non-migrant households are consistent with that suspicion. However, such a conclusion is not necessarily warranted due to selection into migration with the implication that causality from migration to happiness cannot be

established by simply comparing the two groups. In order to purge the data of selection biases, we use matching methods to draw a "control" group which could assign causality from migration to happiness. This exercise, however, resulted in an unexpected conclusion. There is no difference in the levels of happiness of migrant and non-migrant households. The apparent difference in happiness levels is erased once we evaluate non-migrant households who are comparable to migrant households.

Why may it be that we find no differences in the happiness levels of migrant families relative to non-migrant families? We think that this may be because we have not taken into consideration that there is a second factor that often accompanies migration that is not accounted for in our analysis. Migrant families are often the recipients of remittances from abroad. If remittances contribute toward happiness levels then it may be that, in fact, we have not been able to clearly assess the impact of migration on happiness because the household is impacted by two activities, the outmigration of family and the receipt of remittances from abroad. While the outmigration of family is expected to reduce happiness levels, the inflow of remittances might be expected to increase happiness levels and in some respects compensate for the absence of loved ones.

In order to test to see if indeed this may be the case, it would be necessary to determine whether remittances increase happiness levels. On a purely descriptive level we can divide households into those that receive remittances and those that do not, conditioned on whether they are a migrant household and compare happiness levels. This is done in Table 5. In this matrix we see that in the aggregate happiness levels are lowest for households that claim a migrant member yet do not receive remittances — only 52 percent claim to be happy. In contrast, households with migrant members but who receive remittances, display more happiness in the aggregate (59 percent are happy), suggesting that there is some tradeoff between the physical presence of a family member and the receipt of remittances. Remittances may be compensating for the absence of a loved one.

Table 5
Happiness levels by migrant household and remittance recipient

	Percent of Migrant Households claiming to be happy	Percent of non-Migrant Households claiming to be happy
Receives remittances	59	56
Does not receive remittances	52	73

In an ideal world, we could separately test for the impact of remittances and migration on happiness. But in order to do so we would need considerably more information both on the household and on the migrant. Given the lack of data, it is not possible to statistically establish separate effects of remittances and migration on happiness and hence, we can only speculate on their different impacts. We are limited to assessing how migrant families are, broadly speaking, affected by some combination of migration and remittances.

There are, of course, other possible explanations for finding no differences in subjective well-being with respect to the migrant and matched control groups. Our sample size may be too small or bias may persist. It might also be the case that some households' subjective well being is enhanced with migration while others are reduced. For example, migrant household who have experienced the emigration of children may report that they are unhappy, while those who's spouse has emigrated might report instead that they are happy. The two impacts may be cancelling out in the average statistics that we compare.

Conclusions

In this paper we set out to study the impact of migration on the happiness of the family left behind. We exploit the results of a survey conducted in Cuenca, Ecuador in 2006 that collects information on the subjective well-being of the family head along with migration related variables for the family. As such, this survey allows us to explore the impacts of migration on subjective well being.

As in any study of happiness, the primary challenge is to correct for endogeneity. Given selectivity in terms of who migrates, unobserved heterogeneity is likely to complicate the assessment of migration on happiness. Dealing with this endogeneity is essential if we are to obtain credible and reliable results. In our case, we choose to deal with the endogeneity by using matching methods. To assess the impact of migration on happiness we first estimated a propensity score for migration. These scores were then used to find matched controls for those observations that were "treated" with migration.

While we attempt to solve the endogeneity problem by using matching methods, we note a second challenge to studying the impact of migration on happiness. This has to do with the fact that when communities are touched by migration, a second phenomenon occurrs simultaneously. Remittances, a by-product of migration, often (but not always) flow to the family back home. Now, if migration and remittances always take place together, it would not matter and measuring the ef-

fect of one would provide us with ample understanding of how this phenomenon in the aggregate impacts households. However, while it is true that remittances often follow migration, it is not the case that all migrant households receive remittances. Similarly, households that receive remittances are not necessarily migrant households (using our definition of a migrant household). In fact, in our sample, 17 percent of households are migrant household while 28 percent of households receive remittances. There are, evidently, many households who receive remittances from (presumably) distant relatives and friends.

Thus, we make a number of tentative conclusions. First, households that claim to have migrant members seem to differ from households that do not have migrant members, complicating any assessment into how migration affects happiness levels. This selection into migration seems to account for at least some of the differences in average levels of happiness observed in the migrant and non-migrant household groups. That is, the observed discrepancy in happiness levels between migrant and non-migrant households seems to be due, at least in part, to inherent differences in these two groups. Second, some migrant households receive no remittances from their family abroad while others do. We tentatively suggest that happiness levels differ for migrant households according to whether they receive remittances from abroad or not. Migrant households that receive remittances may report greater satisfaction than those migrant households that do not receive remittances. It may be that remittances, to some degree, "compensate" migrant households who are less happy explaining why we observe no differences in happiness levels across the two groups of households.

What is the mechanism by which remittances raise happiness levels? Is it because the monetary transfers truly compensate for the absence of the loved one? Or are the remittances a re-affirmation of the loyalties of a now absent household member? Our analysis cannot answer these questions. But we note that the close link between migration and remittances and the disentangling of the two is an important issue for migration scholars to tackle in order for us to obtain a more accurate assessment of the effects of international migration on households around the globe.

Notes

1. Corresponding author

2. According to the United Nation's population database, world population in 2005 stood at 6.5 billion (United Nations,World Population Prospects: The 2008 Revisions). In the same year, the United Nations estimated that there were 195 million migrants (United Nations, Trends in International Migrant Stock: The 2008 Revision).

3. See UNDP (1999) for more on this point. It should also be noted that over the longer run it is conceivable that technological innovations reduce migration. Technology may facilitate that work take place across international borders without the need for workers to move abroad to take advantage of work opportunities.

4. Almost all households in San Fernando are migrant households. As will become evident in the methodology section of this paper, it is not possible to employ the methodology we use for households residing in San Fernando since there are too few non-migrant households to draw from to obtain our counterfactual comparison group.

5. In this paper we will refer to those responding that they are satisfied with live as "happy" and those not satisfied with life as "unhappy". Note that using the terminology — happy or unhappy — as synonymous with being satisfied or not with life is not strictly appropriate. As a referee pointed out, "just the fact that somebody is 'satisfied with life' doesn't translate into a happy person. The person may be, for instance, resigned to live a life of misery." We use the term "happy" as a convenience and ask the reader to note this convention in this paper.

6. The exact wording for this question in the original is: *¿En términos generales, usted diría que está muy satisfecho con su vida, bastante satisfecho con su vida, no muy satisfecho o para nada satisfecho?*

7. The received wisdom is that there is considerable selectivity with respect to a host of migrant characteristics (See Chiquiar and Hanson (2005) and Feliciano (2005) for examples). This selectivity is likely to spillover into the characteristics embodied by the households from which the migrants originate.

8. While migration experiments tend to be rare, there are several important exceptions. For a few examples see Stillman, McKenzie, and Gibson (2009) and Aycinema, Martinez, and Yang (2009).

9. Recall, non-migrant households may have migrants, but they are not "close" family members. A cousin, for example, is not defined to be a close family member in this paper.

10. Our results remain mostly intact when we allow for only 1 matched observation per treated observation.

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Appendix

Descriptive Statistics for variables discussed and used in the analysis

Cuenca, Ecuador, 2006

Variable	Mean	Standard deviation	Minimum	Maximum
Happiness	0.68	0.47	0	1
Age	41.12	16.65	18	86
Schooling	4.46	1.57	1	7
Fulltime	0.45	0.49	0	1
Self employed	0.44	0.49	0	1
Married (or partnered)	0.63	0.48	0	1
Household size	4.29	2.06	1	15
Per Capita income	1637	1823	0	13200
"Migrant" household	0.76	0.43	0	1
"Close migrant" household	0.17	0.37	0	1
Black household	0.00	0.07	0	1
Indigenous household	0.03	0.18	0	1
Mestizo household	0.85	0.36	0	1
White household	0.11	0.31	0	1
Receives remittances	0.28	0.45	0	1

Notes: 478 households, from Discrimination and Economic Outcomes Survey, Latin American and Caribbean Research Network, Inter-American Development Bank.

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Workers' Migration and Remittances in Bangladesh

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Abstract

Bangladesh has sent more than 6.7 million workers to over 140 countries during a period of more than three decades since the mid-1970s. Most of these workers temporarily migrated to work in Middle East and Southeast Asia. This mass movement of temporary migrant workers has, to some extent, eased unemployment pressures on the over-burdened labor market in this highly populated country. More importantly, the remittance transfers received from these migrant workers have reached a phenomenal level of over 10 billion US dollars in 2009, approximately 12 percent of GDP in Bangladesh. This paper analyzes the trends and various other aspects of workers' migration and remittances in Bangladesh. It further discusses the micro and macroeconomic impacts of remittances. While most remittance transfers have been used by migrant-sending households for consumption, there is evidence to show that these transfers have helped reduce poverty in Bangladesh. The analysis presented in this paper further indicates that these remittances may have significant effects on other macroeconomic variables as well.

Introduction

A labor-abundant country, Bangladesh has sent over an estimated 6.7 million migrant workers to more that 140 countries across the globe over a period of more than three decades since the mid-1970s.[1] The countries of Middle East and Northern Africa have been the major destinations for these migrant workers. In the recent past, there have been large flows of Bangladeshi migrant workers to Southeast Asia — particularly to Malaysia and Singapore — as well. The natural resource based economic prosperity of the first group of destination countries since the 1970s has created a large demand mainly for unskilled and semi-skilled workers to work in different sectors of those economies. Similarly, the economic boom of the Southeast Asian countries in the late 1980s and the 1990s generated demand for unskilled and semi-skilled workers. Bangladesh with a large population and limited economic opportunities has decidedly taken advantage of economic growth and prosperity in those countries.

These flows of migrants leaving the country have not only fulfilled the mandate of the government policy to encourage out-migration as a means of eas-

ing unemployment pressure on Bangladesh' ever exploding labor market, but also the remittances received from the migrant workers have had significant impact on the economy. With more than 10 billion U.S. dollars (USD) in remittances during 2009 alone, Bangladesh has been among the major remittance-receiving countries in the world and it has maintained this status for last several years.[2] This amount is about 12 percent of GDP and more than half of total export earnings. It may be noted that if the money remitted through informal channels are taken into account, the magnitude will be much larger.[3] Furthermore, not surprisingly, the countries of Middle East have been the major sources of these remittance transfers. As noted by an official associated with labor migration, "remittances have been causing a silent economic revolution in Bangladesh."[4] However, the broader impacts of remittances in the economy have not been fully assessed. There have been only a few studies that use micro-level survey data to examine the economic effects of remittances in Bangladesh. To the best of our knowledge, there is hardly any work that systematically investigate the overall macroeconomic impact of remittances in Bangladesh.[5] However, studies for other countries have shown that these remittance flows could have significant macroeconomic consequences.[6]

This paper is intended to examine the dual phenomena of workers' migration and remittances in Bangladesh. Over the years, under the government patronage, the international migration of workers has taken some pressure off from the domestic labor market and has purportedly enhanced the economic well-being of the families left behind by the migrants. However, given the size of the remittance inflows — primarily from these migrant workers — relative to the total income generated in the domestic economy, there could be significant impacts of these inflows on the overall economy. Intuitively, there are several ways in which these inflows may have macroeconomic impact in a poor country like Bangladesh. For example, if a significant part of the remittances is used for saving and investment, it could lead to higher growth of the economy in the long-run. If the remittance-receiving families spend a significant amount of these transfers on education and health — two important elements of human capital — this may also contribute to long-run growth of the economy. Furthermore, by alleviating foreign exchange constraint, remittances may facilitate imports of capital goods and other important raw materials that are used in the production processes. Even in the short-run, remittances may contribute to the growth of output in the economy by augmenting aggregate demand if the remittance-receiving households spend most of these transfers on consumption.

The rest of the paper is organized as follows. In section 2, we discuss various trends of international migration of workers from Bangladesh. Different aspects

of remittance transfers over last three decades are discussed in section 3. Section 4 discusses the impacts of remittances in Bangladesh. The discussion is divided into two subsection. In the first subsection, we report and discuss the findings of the previous micro-level studies. In the second subsection, we present the preliminary results from a vector autoregressive (VAR) macro model to shed lights on the macroeconomic impacts of remittances in Bangladesh. The next section includes our concluding remarks and a brief outline of future research.

International Migration from Bangladesh

There are two major patterns in international migration from Bangladesh: one to the industrialized west that includes the United Kingdom and the United States, and the other to Middle East and Southeast Asia. The migration to the industrialized countries is perceived to be long term or permanent in nature while migration to Middle East and Southeast Asia is usually for short term. The Bangladeshi immigrants living in the industrialized countries of Europe and North America can be divided into two distinct groups: a group of well-educated, high or middle income people of Bangladeshi origin, and the other belonging to the low income or unemployed segments of the population. The origins of migration to these countries can be traced back to the British colonial period. Most of these early migrants were employed as low-skilled workers and there has been hardly any upward economic mobility. However, a very small number of Bangladeshis during the colonial period moved to the U.K. to pursue higher studies. In recent years, larger number of students and professionals migrated to the U.K. and the U.S. and chose to live there permanently. The government does not have any systematic record of the extent and composition of this long-term migration. However, according to an unofficial estimate, over a million Bangladeshi immigrants live in the industrialized countries of the west (Siddiqui, 2004).

International migration to the countries of Middle East, North Africa, and Southeast Asia took place mainly after the independence of Bangladesh in 1971. The rise in oil prices in the 1970s increased the demand for low-skilled workers to work in the infrastructure development projects in the Middle Eastern countries. Later, there were similar demands from the newly industrialized countries of the Southeast Asia. Migration to these regions has been characterized by short-term employment with specific job contracts and migrants returning home after completion of the contract period.

The Bureau of Manpower, Employment and Training (BMET) maintains a database on the short term labor migrants who officially go overseas for employ-

ment. According to the official statistics, between 1976 and 2009, the total number of Bangladeshis working abroad as short-term migrants stands at about 6.7 million. Figure 1 presents the total number of migrant workers for each year between 1976 and 2009. The major destination countries for these short-term migrant workers include Saudi Arabia (KSA), the United Arab Emirates (UAE), Malaysia, Kuwait, Oman, Singapore, Bahrain, Qatar, and Libya (see Figure 2). Saudi Arabia alone hosts about 40 percent of the total short-term migrant workers from Bangladesh.

Figure 1
Total Number of International Migrant Workers from Bangladesh: 1976-2009

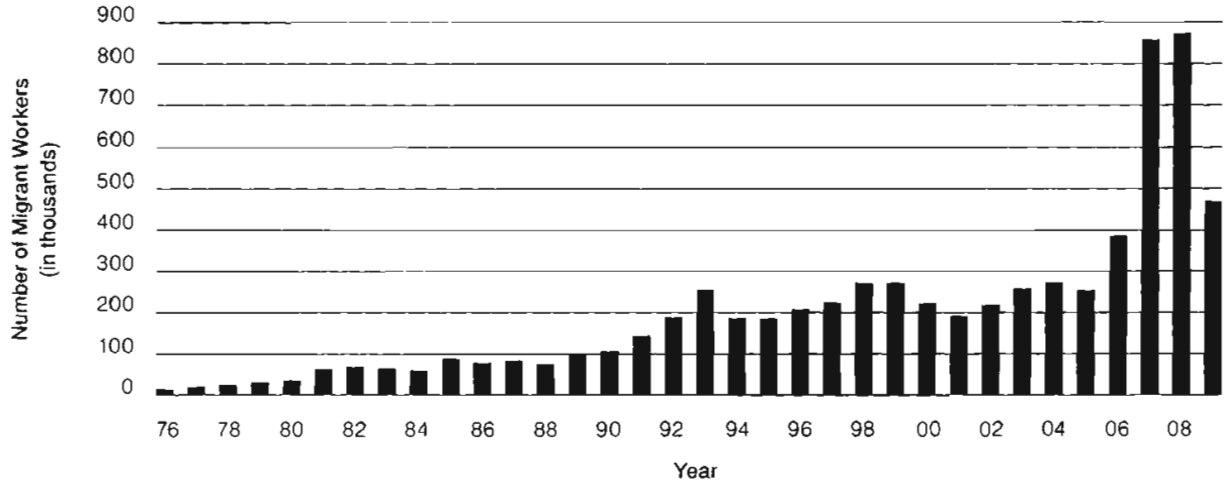


Figure 2
International Migrant Workers from Bangladesh by Country of Destination (in Percentages): 1976-2009

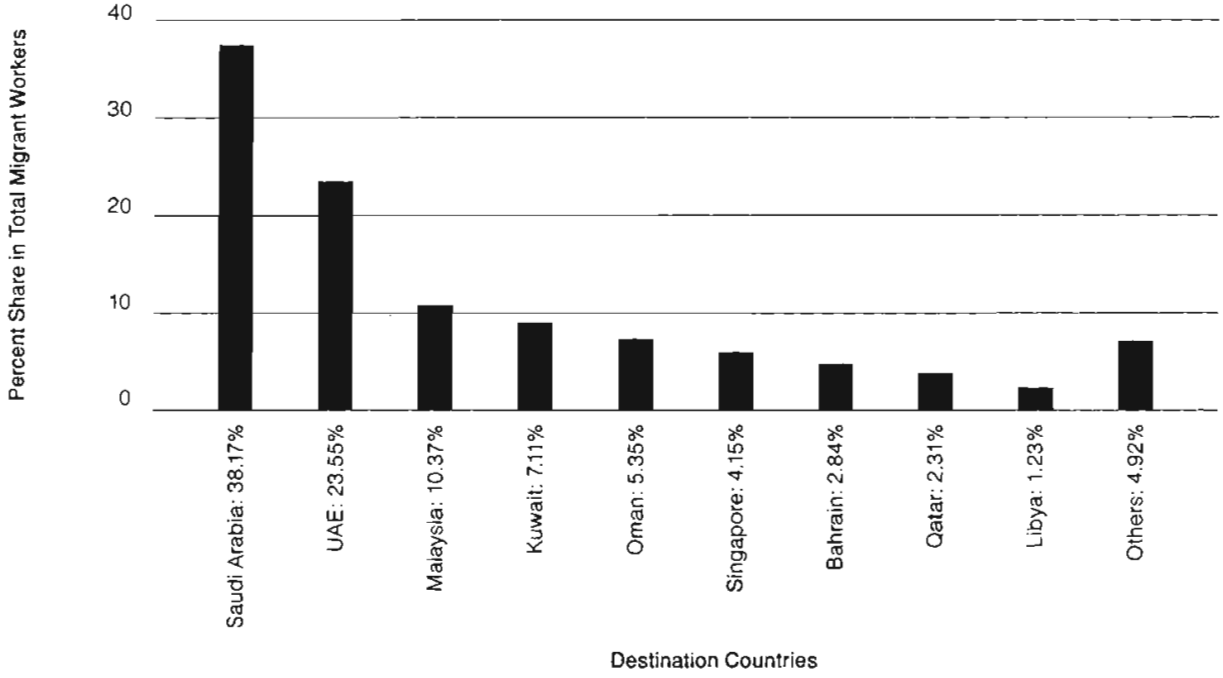


Table 1

Number of Migrant Workers from Bangladesh by Country of Destination: 1976 - 2009

	Country																						
Year	KSA	UAE	Kuwait	Oman	Qatar	Bahrain	Lebanon	Jordan	Libya	Sudan	Malaysia	Sing.	S. Korea	UK	Italy	Japan	Egypt	Brunei	Maurit.	Romania	Others	Misc. Clear.	Total Empl'mt.
1976	217	1,989	643	113	1,221	335			173												1,396		6,087
1977	1,379	5,819	1,315	1,492	2,262	870			718												1,870		15,725
1978	3,212	7,512	2,243	2,877	1,303	762			2,394		23										2,483		22,809
1979	6,476	5,069	2,298	3,777	1,383	827			1,969			110									2,586		24,495
1980	8,695	4,847	3,687	4,745	1,455	1,351			2,976		3	385									1,929		30,073
1981	13,384	6,418	5,464	7,352	2,268	1,392			4,162			1,083									14,264		55,787
1982	16,294	6,863	7,244	8,248	6,252	2,037			2,071			331									13,422		62,762
1983	12,928	6,615	10,283	11,110	7,556	2,473			2,209		23	178									5,845		59,220
1984	20,399	5,185	5,627	10,448	2,726	2,300			3,386			718									5,925		56,714
1985	37,133	8,336	7,384	9,218	4,751	2,965			1,514			792									5,601		77,694
1986	27,235	8,790	10,286	6,255	4,847	2,597			3,111		530	25									4,982		68,658
1987	39,292	9,953	9,559	440	5,889	2,055			2,271												4,558		74,017
1988	27,622	13,437	6,524	2,219	7,390	3,268			2,759		2										4,900		68,121
1989	39,949	15,184	12,404	15,429	8,462	4,830			1,609		401	229									3,227		101,724
1990	57,486	8,307	5,957	13,980	7,672	4,563			471		1,385	776									3,217		103,814
1991	75,656	8,583	28,574	23,087	3,772	3,480			1,124		1,628	642									585		147,131
1992	93,132	12,975	34,377	25,825	3,251	5,804	37		1,617		10,537	313						228	12		16		188,124
1993	106,387	15,810	26,407	15,866	2,441	5,396	37		1,800		67,938	1,739						328	12		347		244,508
1994	91,385	15,051	14,912	6,470	624	4,233	382		1,864		47,826	391	1,558					1,335	26		269		186,326
1995	84,009	14,686	17,492	20,949	71	3,004	406		1,106		35,174	3,762	3,315					2,659	229		681		187,543
1996	72,734	23,812	21,042	8,691	112	3,759	490		1,966		66,631	5,304	2,759					3,062	196		1,156		211,714
1997	106,534	54,719	21,126	5,985	1,873	5,010	907		1,934		2,844	27,401	889					303	238		1,314		231,077
1998	158,715	38,796	25,444	4,779	6,806	7,014	1,389		1,254	8	551	21,728	578					169	16		420		267,667
1999	185,739	32,344	22,400	4,045	5,611	4,639	219		1,744	16		9,596	1,501			7		1	139		181		268,182
2000	144,618	34,034	594	5,258	1,433	4,637			1,010	54	17,237	11,095	990			22	9	1,420	271		4		222,686
2001	137,248	16,252	5,341	4,561	223	4,371			450	153	4,921	9,615	1,561			19	3	2,958	272		1,017		188,965
2002	163,269	25,462	15,769	3,854	552	5,421	2	1,829	1,574	136	85	6,856	28		19	37	17	154	59		133		225,256
2003	162,131	37,346	26,722	4,029	94	7,482	3	2,128	2,855	784	28	5,304	3,771	166	28	12	26	980			301		254,190
2004	139,031	47,012	41,108	4,435	1,268	9,194		6,022	606	923	224	6,948	215	2,055	550	47	33	1,802	44		2,859	8,582	272,958
2005	80,425	61,978	47,029	4,827	2,114	10,716	14	9,101	972	885	2,911	9,651	223	2,793	950	79	207	191	1,381		4,015	12,240	252,702
2006	109,513	130,204	35,775	8,082	7,691	16,355	821	2,822	104	2,380	20,469	20,139	992	1,625	1,428	174	639	496	2,090		8,995	10,722	381,516
2007	204,112	226,392	4,212	17,478	15,130	16,433	3,541	494	1,480	1,726	273,201	38,324	39	972	10,950	164	1,068	1,186	3,658		1,827	10,222	832,609
2008	132,124	419,355	319	52,896	25,548	13,182	8,444	682	5,067	170	131,762	56,581	1,521	952	6,928	133	1,891	1,054	3,071	830	1,631	10,914	875,055
2009	14,666	258,348	10	41,704	11,672	28,426	13,941	1,691	22,742	514	12,402	39,581	1,474	1,253	5,339	39	3,018	2,699	1,826	229	5,219	8,485	475,278
Total	2,573,129	1,587,483	479,571	360,524	155,723	191,181	30,633	24,769	83,062	7,749	698,736	279,597	21,414	9,816	26,192	733	6,911	21,025	13,540	1,059	107,175	61,165	6,741,187
%	38.17	23.55	7.11	5.35	2.31	2.84	0.45	0.37	1.23	0.11	10.37	4.15	0.32	0.15	0.39	0.01	0.10	0.31	0.20	0.02	1.59	0.91	

Source: Bureau of Manpower, Employment and Training (BMET), Bangladesh

As it is clear from Figure 1 and Table 1, there have been year-to-year variations in total and country-wise composition of international migration from Bangladesh. For example, there was a drop in migration to Middle East during the gulf war in the early 1990s. After the war was over, there was a greater demand for migrant workers to work in the post-war reconstruction efforts. Similarly, there was a decrease in demand for Bangladeshi workers in the Southeast Asian countries immediately after the financial crisis of 1997. As recently as 2006 through 2008, there was a substantial increase in demand for migrant workers in the UAE, presumably triggered by the economic boom caused mainly by manifold increases in oil revenue. During 2007, the demand for Bangladeshi workers increased significantly in Malayasia as well. The significant drop in the number of Bangladeshi workers in 2009 is the direct fall-out of the economic slowdown caused by the recent global financial crisis. Despite the tremendous growth in overseas employment of Bangladeshi migrant workers, the last few years have also witnessed increased competition from new migrant labor sending countries like Nepal, Cambodia, and Viet Nam (Siddiqui, 2005).

In terms of skill composition of the short-term migrant workers from Bangladesh, professional workers like doctors, engineers, teachers, and nurses constituted less than 5 percent in 2004 and this ratio has drastically dropped to almost 0 in 2008. Skilled workers such as manufacturing or garment workers, drivers, computer operators, and electricians accounted for about 32 percent, and semi-skilled workers like tailors and masons accounted for another 16 percent of the total migrants in 2008. Unskilled workers accounted for the rest (about 52 percent). Most of the short-term migrants are male and the female migrant workers accounted for less than 2 percent in 2008. This ratio was about 5 percent during 2005-06.[7] There are government restrictions on migration of female workers. Further, according to a survey conducted by Sharma and Zaman (2009), the average duration of employment for the migrant workers is 6 years. They also find that migration increases with age and the level of education, and then declines beyond a threshold (44 years of age and 9 years of education). In addition, families with land holdings are more likely to migrate than do landless families. This is not unrealistic as there is high upfront cost associated with migration.[8]

Previous studies indicate that most international migration from Bangladesh originates from the districts of Sylhet, Chittagong, Noakhali, Comilla, and Dhaka (Murshid et al., 2002).[9] While it has its origin in history, it has some important implications for current emigration. For instance, there are some interesting links between destinations and origins. For example, the Bangladeshi migrants in the Tower Hamlets in the U.K. mostly came from Sylhet. Similarly, migration to Rome mostly

originates in Faridpur district. This points to the strong network effects among the immigrants. These places also serve as the first stepping stone for international migration and, therefore, receive a lot of internal migrants who hope to eventually go abroad. In recent years, the recruiters of temporary migrant workers, who bear the burden of guaranteeing a smooth supply of adequately skilled and reliable workers, chose to minimize information asymmetries and moral hazard by recruiting within narrow social or community networks where information flows are better and labor contracts are easier to monitor and enforce (Sharma & Zaman, 2009).

It is important to note that the government plays an important role in the out-migration of Bangladeshi workers. The Emigration Ordinance of 1982 is the key regulatory instrument used by the government with respect to migration. However, several statutory regulatory orders and framed rules introduced subsequently have played complementary or supplementary roles to this instrument. Five government ministries are involved in international labor migration: (i) the Ministry of Expatriates' Welfare and Overseas Employment that was created in 2001; (ii) the Ministry of Home Affairs; (iii) the Ministry of Foreign Affairs; (iv) the Ministry of Finance; and (v) the Ministry of Civil Aviation and Tourism (Siddiqui, 2005). The first of these five ministries is primarily responsible for the migration sector and it pursues the twin goals of creating employment opportunities overseas and addressing problems experienced by expatriates to ensure their well being. Under this ministry, the Bureau of Manpower, Employment and Training (BMET) is the executing agency, responsible for a wide variety of functions ranging from control and regulation of migrant worker recruiting agents to organizing pre-departure briefing sessions for the migrant workers and resolving legal disputes.[10] The Bangladesh missions abroad also play an important role in labor migration by performing the following tasks: (i) exploration of potential labor market; (ii) attestation of recruitment documents; (iii) consular services to Bangladeshi workers; and (iv) ensuring the welfare of migrant workers.

The Bangladesh Overseas Employment Services Limited (BOESL) is the government agency that is involved in direct recruitment of workers for international migration. During 1976-2003, less than 2 percent of the migrant workers were assisted by the government agencies (BMET and BOESL) and about 41 percent received assistance from private recruitment agencies which are licensed by the government, and organized under the national umbrella organization called Bangladesh Association of International Recruitment Agencies (BAIRA).[11] However, more than 55 percent of migrant workers were recruited through individual initiatives and social networks.[12]

The international migrants from Bangladesh face a number of problems in both home country and host country. For example, the initial cost of international migration could be prohibitively high. There are allegations of exploitation by recruitment agents and foreign employers. There are reports of racial and ethnic discrimination in host countries of Middle East and Southeast Asia. Both home and host countries are lax in formulating appropriate policy to protect the rights of the migrant workers and their families. Most major destination countries have not ratified the 1990 International Convention on the Protection of Rights of All Migrant Workers and Members of their Families.[13]

Remittance Flows into Bangladesh

Size, Growth, and Origins of Remittances

According to official statistics published by Bangladesh Bank, a total amount of USD 67.67 billion has been remitted to Bangladesh from across the globe between 1975-76 and 2008-09. However, if we add the amount of remittances transferred through informal channels and therefore not captured in the official data, this number will be much higher. As Figure 3 shows, except for a few years in early 1980s and one year around 2000, the remittance flow has been steadily increasing with an acceleration in the growth rate in recent years. The Iran-Iraq War seems to explain the slowdown in the growth of remittances in the early 1980s. Similarly, the Gulf War of the early 1990s may have been the reason for sluggish growth in remittances during that period. It should be noted that the recent spur in the growth of remittances can partially be ascribed to increased use of formal channels of remitting money from abroad for a variety of reasons. They include increased efficiency and larger network of formal channels that involve both nationalized commercial banks (NCBs) and private commercial banks (PCBs), somewhat stricter enforcement of laws against informal channels like the *hundi* system (which are supposedly used for transfer of funds among terrorist groups) after the terrorist attack of September 11, 2001, and various government programs to encourage remittance transfers.[14]

Most remittance flows originate in Middle East. Figure 4 presents total remittance transfers by country of origin between 1998-99 and 2009-10. As the figure shows, Saudi Arabia alone is the source of more than USD 18 billion in remittance transfers to Bangladesh between the fiscal years of 1998-99 and 2009-10. Over the same period, the United States has been the second largest source of remittances with USD 8 billion, followed by the United Arab Emirates with USD 7.1 billion, Kuwait with USD 5.7 billion, and the United Kingdom with 4.8 billion. It is clear

from the figure that the largest share of the remittances originate in countries that receive most of the short-term migrant workers.

Figure 3
Remittance Flows into Bangladesh: 1976-2009

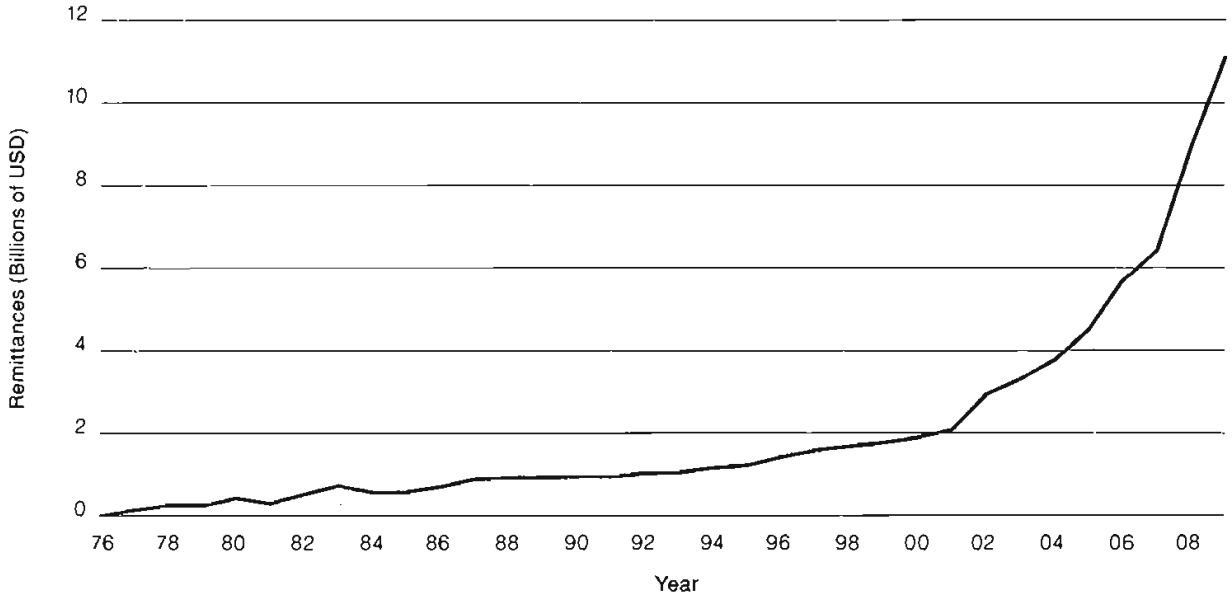


Figure 4
Remittance into Bangladesh by Country of Origin: Total Between 1998-2009

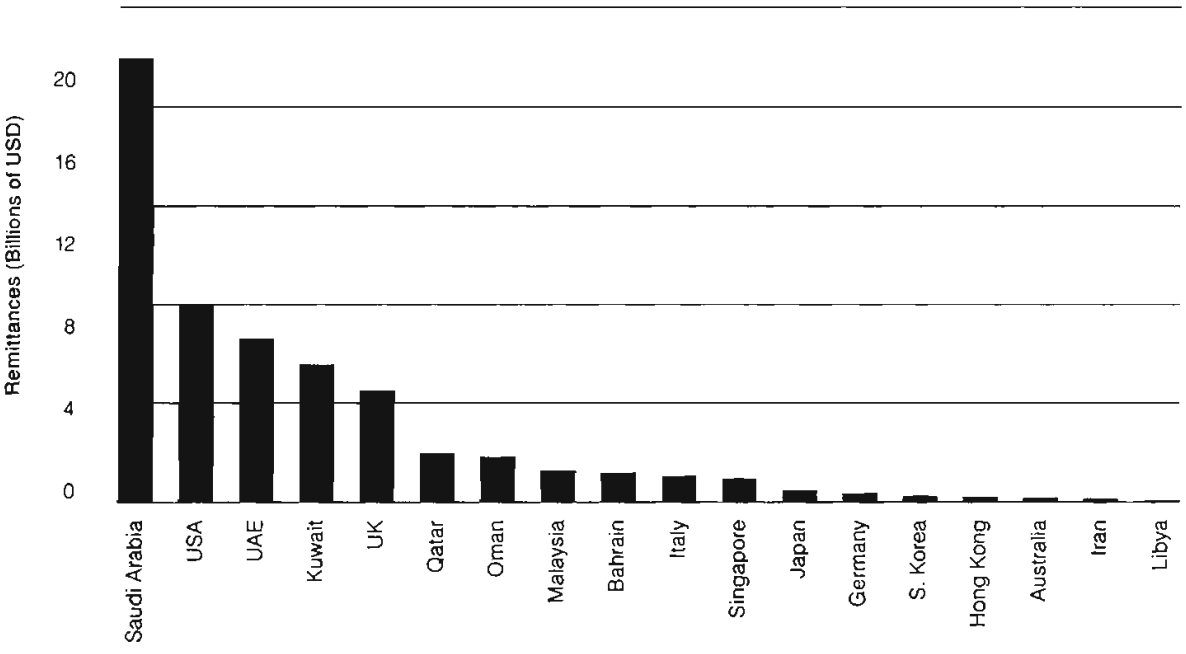


Table 2

Workers' Remittances into Bangladesh by Country of Origin:

1998-99 – 2009-10 (millions of US Dollars)

Country	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	Total
Bahrain	38.94	41.8	44.05	54.12	63.72	61.11	67.18	61.29	79.96	138.2	157.43	98.69	906.49
Kuwait	230.22	245.01	247.39	285.75	338.59	361.24	406.8	454.38	680.7	863.73	970.75	602.67	5687.23
Oman	91.93	93.01	83.66	103.27	114.06	118.53	131.32	153	196.47	220.64	290.06	218.72	1814.67
Qatar	63.94	63.73	63.44	90.6	113.55	113.64	136.41	161.43	233.17	289.79	343.36	222.94	1896
K.S.A.	685.49	916.01	919.61	1147.95	1254.31	1386.03	1510.46	1562.21	1734.7	2324.23	2859.09	1985.13	18285.22
U.A.E.	125.34	129.86	144.28	233.49	327.4	373.46	442.24	512.64	804.84	1135.14	1754.92	1100.45	7084.06
Libya	0.14	0.04	0.1	0	0.16	0.13	0.27	0.16	2.61	0.36	1.25	1.01	6.23
Iran	0.19	0	0	0	0.22	0.38	0.52	1.68	2.36	3.24	3.28	2.74	14.61
Sub total for Middle East	1236.2	1489.5	1502.5	1915.2	2212	2414.5	2695.2	2906.8	3734.8	4975.3	6380.1	4232.4	35694.51
Australia	0	0	0	2.28	3.38	4.79	7.15	8.89	11.34	13.11	6.78	5.21	62.93
Hong Kong	5.13	5.15	3.96	3.99	4.77	5.92	5.63	5.37	6.15	8.1	9.09	5.46	68.72
Italy	0	0.22	0.41	0.35	19.32	27.16	41.38	78.43	149.65	214.46	186.9	128.3	846.58
Malaysia	67.52	54.04	30.6	46.85	41.4	37.06	25.51	19.05	11.84	92.44	282.22	328.13	1036.66
Singapore	13.07	11.63	7.84	14.26	31.06	32.37	47.69	61.32	80.24	130.11	165.13	112.59	707.31
U.K.	54.04	71.79	55.7	103.31	220.22	297.54	375.77	517.39	886.9	896.13	789.65	524.91	4793.35
U.S.A.	239.41	241.3	225.62	356.24	458.05	467.81	557.31	701.37	930.33	1380.08	1575.22	845.35	7978.09
Germany	5.14	4.7	3.84	6.11	9.57	12.12	10.1	10.95	14.91	26.87	19.32	11.6	135.23
Japan	39.42	34.56	10.74	14.14	18.24	18.73	15.99	8.71	10.17	16.29	14.12	9.25	210.36
S.Korea	1.87	0.52	0.33	0.79	3.93	5.19	18.41	16.4	17.08	19.69	18.33	15.25	117.79
Others	43.95	35.95	40.53	37.63	40.02	48.76	48.15	92.56	125.05	142.17	242.36	267.19	1164.32
Sub total for regions other than Middle East	469.55	459.86	379.57	585.95	849.96	957.45	1153.1	1520.4	2243.7	2939.5	3309.1	2253.2	17121.34
Total	1705.7	1949.3	1882.1	2501.1	3062	3372	3848.3	4427.2	5978.5	7914.8	9689.3	6485.6	52815.85

Source: Bangladesh Bank

Determinants of Remittances to Bangladesh

In general, the literature differentiates between micro and macroeconomic determinants of remittances.[15] Among the microeconomic determinants, altruism towards the family left behind by the migrants in the home country, investment in home country by "self-interested" migrants, insurance against risks that migrants are exposed to in the host country, and payment back (return) to the family for the investment that it made on the migrant, have been extensively discussed and tested for various remittance receiving communities/countries around the world. At the macro level, movements of foreign exchange rate, differences in interest rates between host and home country, and business cycle fluctuations in host and home country of the migrants have been shown to be important determinants.

There have been only a few studies that explore the determinants of remittance transfers to Bangladesh. These studies seem to focus on macroeconomic determinants. For example, Barua, Mahumber, and Akhtauzzaman (2007) show that income differentials between host and home country and devaluation of home country currency positively and high inflation rate in home country negatively affect workers' remittance decision. Using a simple regression analysis, Hussain and Naeem (2010) find that number of workers finding employment abroad every year, oil price, exchange rate, and GDP growth are the key determinants of changes in the level of remittance inflow into Bangladesh. According to their results, each additional migrant worker increase remittances by USD 816 annually. Furthermore, a one dollar increase in oil price increases annual remittance transfers to Bangladesh (mainly from Middle East) by nearly USD 15 million. They also find that depreciation of exchange rate by one Bangladeshi taka increases annual remittance by USD 18 million and that remittances are higher during periods of low economic growth in Bangladesh. The last result is consistent with the finding of Sayan (2006) who shows that migrants from Bangladesh increase their remittance transfers during times of economic hardship in their home country.

Economic Impacts of Remittances in Bangladesh

Microeconomic Impacts

It has been a general conclusion of most micro-level studies that the remittance-receiving households use the largest fraction of remittances for consumption. However, purchase of land, construction and repair of houses, and repayment of loans have been some of the other important uses of remittances.

Table 3
Percentage Distribution of Remittances by Expenditure Categories

Expenditure Categories	Range of percentage share of remittances spent
Food and clothing	20-36
Purchase of land	3-40
Home construction and repair	2-30
Repayment of loans	10-19
Wedding and other social ceremonies	0-10
Education	0-5
Savings	3-7
Funding other peopleís migration	0-7
Investment in business	0-5
Health care	0-4

Source: Compiled from various studies

Various survey-based studies indicate that family transfers account for up to 70 percent of the total household income. Some studies (e.g., Afsar et al., 2002) suggest that over time households with overseas labor migrants become increasingly dependent on remittances. Most surveys also indicate that remittances are mainly used for consumption (Siddiqi & Abrar, 2001; Afsar, 2003). Depending on how consumption is defined, as much as 80 to 90 percent of remittances are used for this purpose. Table 3 presents the percentage distribution of remittances spent by the most important expenditure categories. Note that it presents the range of percentage shares of remittances spent on these items as reported by various micro-level studies. Whether all items can be included in consumption is disputable. While it is not surprising that between $1/5^{th}$ and $1/3^{rd}$ is spent on basic items like food and clothing, it is interesting to note that up to 40 percent of remittances are spent on purchase of land. Land is the safest way to invest in Bangladesh. As Siddiqqi and Abrar (2001) argue, arable land provides direct economic return through crop production. Furthermore, in a land-shortage economy like Bangladesh, the value of land appreciates very quickly. Repayment of loans also accounts for a large share of the total use of remittances. These findings are further corroborated by Sharma and Zaman (2009). They find that while the remittance-receiving families spend more on consumption of food and non-food items, the same is not true for health and education expenditure. They also note that their spending on home appliances and land are higher than non-migrant

families'. Finally, remittance-receiving families save more and have more outstanding loans (resulting mainly from high upfront cost of migration). However, it also shows their credit-worthiness.

In an interesting study, Mohapatra, Joseph, and Ratha (2009) find that the remittance-receiving households in Bangladesh had higher per-capita consumption than others after the devastating floods of 1998. Based on household survey data, this study emphasizes the role of remittance transfers as a consumption smoothing mechanism in the face of natural disaster.

There are instances of some non-resident Bangladeshis (NRB) making individual contributions every year to mosques, orphanages, or madrassas. Also, there are Bangladeshi immigrants — mainly in the USA and the UK — who come from the same region/area and organize to pool money and transfer to the respective areas of their origin for charity or community development. The money is given for health care, religious projects, educational projects, construction and repair of roads and culverts, and the provisions of scholarships to students in the villages where the expatriates come from. However, the total transfer is very small and not well known to formal/government institutions in Bangladesh.

Macroeconomic Impacts of Remittances

To give a perspective on how important remittances could be for economy-wide impacts, Table 4 presents comparisons of these transfers with GDP, foreign direct investment (FDI), total merchandize export earnings, and official foreign aid in Bangladesh between 2000 and 2008. By 2008, remittances are already more than 11 percent of GDP. The remittances have far exceeded the official foreign aid and FDI into Bangladesh. The flow of remittances as a share of total export earnings has increased over the years and was about 65 percent in 2008. These comparisons signify the importance of remittances for the overall economy in Bangladesh.

As most micro-level studies show, the remittances directly augment household income and increase consumption. Thus, although remittances do not seem to have contributed to the macro economy, the increases in income and consumption at the household level have some significant macroeconomic consequences. For example, in a note prepared for the G8 Outreach Event on Remittances in Berlin, Ratha and Mahapatra (2007) state that remittance may have reduced the share of poor people in the population by 6 percentage points in Bangladesh. In a recent study, Raihan, Khondker, Sugiyarto, and Jha (2009) further show that a 1.7 percentage point reduction in headcount ratio measure of poverty level between 2000-05 can be attributed

to the growth in remittances. This finding is further corroborated by Vargas-Silva, Jha, and Sugiyarto (2009) who use several different measures of poverty.

Table 4
Comparison of Remittances with Key Macro Variables

Year	Remittances as a percentage share of			
	GDP	FDI	Merchandise Exports	Foreign Aid
2000	4.15	337.88	34.97	
2001	4.41	584.21	36.11	151.2805
2002	5.98	867.44	52.32	197.4889
2003	6.12	907.38	51.01	200.4814
2004	6.30	774.39	47.00	344.8075
2005	7.05	502.94	50.03	285.0349
2006	8.86	691.56	47.08	
2007	9.60	986.19	51.61	402.6996
2008	11.37	826.80	64.59	435.451

Source: Authors' calculations using data obtained from UNCTAD, Bangladesh Bank, and the World Bank.

Furthermore, it is important to recognize that even though remittance receiving households may not directly invest the funds that they receive through transfers from the migrant member, the increase in consumption itself should work its way through multiplier effect on the aggregate demand and, therefore, should contribute positively to growth. Also, it has been noted above that the remittance-receiving households save a part of their remittance transfers. Further, there is some evidence that Bangladeshi immigrants also transfer funds directly to the home country in order to save. Over the years, government and banks have been able to attract savings from individual immigrants by creating a number of bonds and special savings accounts aimed at migrants (de Bruyn & Kuddus, 2005). However, the amount transferred directly for investment is very low.[16] But as long as the savings of the remittance-receiving households and the migrant workers enter the formal financial system in Bangladesh, they are used to finance investment and, consequently, they contribute to long-run growth. In addition, increasing use of the financial system to transfer funds itself should channel some of these remittance flows into productive investment.

Thus, to assess the macroeconomic impact of remittance transfers, we will present (i) an illustration of the multiplier effects of remittances on sectoral level output using the input-output framework; (ii) some tentative results from a vector autoregressive (VAR) macro model.

The multiplier effects of remittances at the sectoral level

Stahl and Habib (1989) analyze the impact of remittances at the sectoral level by using the input-output framework. They use survey data from a World Bank study on the expenditure patterns of remittance-receiving households in Bangladesh and match them to the 47 sectors comprising the input-output table for Bangladesh. This sectoral distribution of expenditures is imputed to total remittances inflow data for the years between 1976 and 1988 to obtain corresponding sector-wise anticipated expenditures out of remittances. Assuming these expenditures to be autonomous additions to final demand attributable to remittances, they are then multiplied by the output multiplier matrix $[I - A + m]^{-1}$ to obtain total output attributable to remittances. Note that here A is the technical coefficient matrix given by the input-output table, and m is the diagonal matrix with import coefficients as the diagonal elements. The results for the most important sectors are summarized in Table 5.

If the remittances are spent on sectors that have strong forward and backward linkages with many other sectors, the overall impact on output is high. For example, according to our calculations, if a dollar of remittances is spent on forestry, it will lead to an increase of about USD 5 in output. Forest products such as bamboos, woods, canes, are used as intermediate inputs to produce a variety of goods. Thus, an initial expenditure on these products may lead to a much larger increase in overall output.

Table 5
Remittance Induced Output in Bangladesh

	Increase in output when USD 1 of remittances is spent (in USD)
Rice	1.09
Other crop	1.21
Live stock	1.34
Fisheries	1.00
Forestry	4.91
Leather	1.18
Wood	1.52
Miscellaneous industries	2.67
Urban house	1.10
Rural house	1.04
Petroleum	1.73
Electricity	1.42
Transport service	1.74
Banking service	1.37
Other service	1.11

Source: Authors' calculations from the results reported in Stahl & Habib (1989).

Some tentative results on the macroeconomic effects of remittances from a VAR model[17]

We now examine the effects of remittances at the macro level by using a vector autoregression (VAR) macro model of the following form:[18]

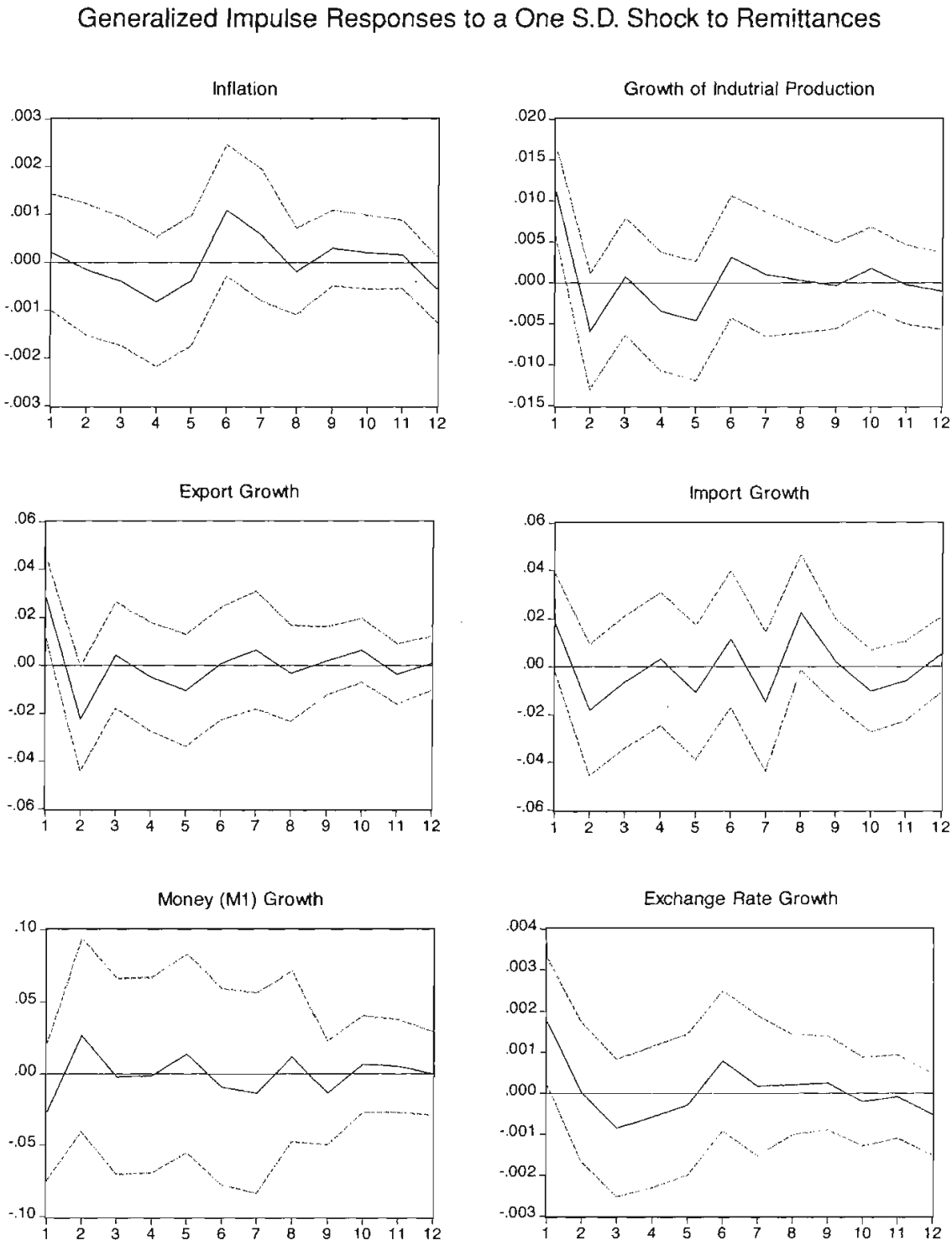
$$Y_t = A_0 + \sum_{i=1}^{p} A_i Y_{t-i} + \varepsilon_t \qquad (1)$$

where Y is an $n \times 1$ vector of macro variables, A_0 is an $n \times 1$ vector of constants, A_i is an $n \times p$ matrix of autoregressive coefficients of lagged variables, and is an $n \times 1$ vector of error terms. Although we would like to include a number of important macro variables in this model, limited availability of data for Bangladesh allows us to use the following variables only: *Industrial Production, CPI, Export Receipts, Import Payments, M1 Money Stock, Remittances,* and the *Nominal Exchange Rate* of US Dollar in terms of Bangladeshi Taka. For each variable, we use monthly data for

a period between July 1994 and December 2008. The data are seasonally adjusted. We conduct Augmented Dickey Fuller (ADF) Test on each series to determine its stochastic trending properties. Except for *M1* and *Remittances*, all other series are found to be unit root processes. Therefore, we use their stationary forms. That is, we use log first differences of all series including *M1* and *Remittances*. We estimate equal lag length VAR with lags of up to 6 months.[19] We then derive the generalized impulse responses of each of the variables to a one standard deviation shock to remittance growth.[20] Figure 5 presents the generalized impulse responses for 12 months.

As we see from the figure, a one standard deviation shock to the growth of remittances has significant positive impact on the growth of industrial production, export growth, and the change in nominal exchange rate in month 1. However, the effects quickly dissipate after the second month.[21] Note that since we include CPI inflation in the model, these results should be interpreted as real effects of a shock to real remittance growth. It is hard to speculate on the actual mechanism through which these macro variables are affected by remittance growth in Bangladesh without exploring more on the structure of the economy. Also, it is imperative to use a more general VAR specification with additional endogenous macro variables. But given the data limitations, it is outside the scope of the current study. Thus, the results presented in Figure 5 should be taken to be indicative of potential effects of remittances on the overall economy and should not be overemphasized as evidence of precise effects on the respective macro variables.

Figure 5
Generalized Impulse responses from a Vector Autoregression Macroeconomic Model



Concluding Remarks

The officially recorded number of migrant workers from Bangladesh to over 140 countries during more than three decades since the mid-1970s stands at over 6.7 million. Most of these workers are temporary migrants working mainly in Middle East and Southeast Asia. This mass movement of temporary migrant workers has, to some extent, eased unemployment pressures on over-burdened labor market of highly populated Bangladesh. More importantly, the remittance transfers from these migrant workers have reached a phenomenal level of about 12 percent of GDP in Bangladesh. The existing studies have shown that most of these remittance transfers augment household income and are used for consumption. However, there has been evidence to show that these remittances have helped reduce poverty in Bangladesh. The analysis presented in this paper further indicates that these transfers may have significant effects on other macroeconomic variables as well.

As pointed out in the paper, international migration of temporary workers from Bangladesh has been a key strategy of the government's employment policy. A country with half of the U.S. population and less than 1 percent of the U.S. GDP, Bangladesh does not have too many options. Emigration of a large segment of the population to high or middle income countries has been suggested as a way of eradicating abject poverty (Moses, 2009). The remittances received from the migrant workers have been significantly large in recent years. It is important to understand how these transfers impact the economy at the macro level so that appropriate policies can be formulated to ensure their optimal utilization. Furthermore, there is hardly any study that examines the overall impact of international migration of workers from Bangladesh. For example, what is its impact on domestic labor markets in terms of employment and wages? How does it affect productivity and growth? Our future research intends to examine in details the macroeconomic impacts of labor migration and remittances in Bangladesh.

Notes

1. This number almost exclusively includes temporary workers who have officially migrated for employment overseas, and does not include most Bangladeshis who have permanently emigrated to Europe and North America and/or those who illegally migrated to other countries, mainly to India. If those groups are included, the number of Bangladeshi migrants will be several times larger.

2. According to the data obtained from the Bureau of Manpower, Employment and Training (BMET), the total remittances received in 2009 amount to USD 10.72 bil-

lion while, according to Bangladesh Bank, the total remittance transfers amount to USD 9.69 billion during the fiscal year 2008-09 and USD 6.49 billion through the month of January during the fiscal year 2009-10.

3. Bahar, Sarker, and Hossain (2006) cite an IMF report to claim that over 59 percent of total remittance transfers between 1981 and 2000 came through informal channels. In contrast, World Bank (2006) reports this share to be a 54 percent.

4. As quoted by de Bruyn and Kuddus (2005, p.42).

5. In a recent paper, Vargas-Silva, Jha, and Sugiyarto (2009) includes Bangladesh in a panel study of 26 countries from Asia to investigate the macroeconomic effects of remittances on economic growth and poverty reduction.

6. For a survey of the literature, see Ruiz and Vargas-Silva (2009).

7. See Siddiqui (2009).

8. As de Bruyn and Kuddus (2005) note, the initial costs that include airfare, passport, visa, insurance, medical checkup, clothes, payment to recruitment agencies etc. may add up to USD 2,000 or more.

9. Siddiqui (2009) lists Brahmanbaria, Chittagong, Comilla, Dhaka, and Tangail as the highest migration prone districts with 5.67, 9.06, 11.48, 6.48, and 6.13 percent of the migrant workers respectively coming from these districts.

10. The government created BMET in 1976, much before the creation of the Ministry of Expatriatesí Welfare and Overseas Employment, to ensure maximum benefit from labor migration to the national economy. Since the enactment of the Emigration Ordinance of 1982, it has been responsible for implementing the Ordinance.

11. There are more than 700 officially licensed private recruitment agencies.

12. See Table 3 in Siddiqui (2005).

13. See Bryun and Kuddus (2005) and Siddiqui (2005).

14. For a discussion on the hundi system and other informal channels through which remittances are transferred from East and Southeast Asia, see Rahman and Yeoh (2006)

15. For a detailed discussion, see Ruiz and Vargas-Silva (2009)

16. The previous studies ascribe it to a host of reasons including lack of promotional support in terms of information, advisory, training and other services, lack of ideas about investment opportunities, lack of expertise in the remittance receiving house-

holds for running businesses, and high opportunity costs in terms of investment environment abroad.

17. We call these results "tentative" mainly for two reasons. First, the limited availability of data restricts the number of variables and the length of the sample period we could use in our VAR estimation. Second, the quality of the data used are of suspect. Sometimes data collected from two different agencies do not quite match. There are data discontinuities. Data on some of the series are not documented well.

18. VAR macro models are very flexible (and, therefore, somewhat popular) in that they can be used to examine relationships between variables without subscribing to any particular theory about such relationships. However, the specification of the model as regards to what endogenous variables and how many lags of those variables are to be included is a contentious issue that the researchers must pay attention to. For a discussion on VAR models, see Enders (2004).

19. Because of the short sample period, we have used 6 lags. However, with 12 lags, the results do not change qualitatively.

20. One advantage of generalized impulse responses is that, unlike impulse responses derived from Cholesky decomposition, they do not depend on the ordering of the endogenous variables.

21. These transitory effects are reminiscent of an aggregate demand shock. However, in the light of the existing literature, it is not clear why remittances would have a positive impact on export growth. The literature (e.g., Amuedo-Dorantes & Pozo, 2004) argues that large remittances reduce export competitiveness through exchange rate appreciation.

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On the Viability of a Multilateral Trade Agreement: A Political-Economy Approach[1]

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Abstract

The big picture issue this paper intends to address is on the incentive aspects of a multilateral trade liberalization. The paper builds on a framework originally introduced in Grossman and Helpman's *The Politics of Free-Trade Agreements* (1995). The aim of that work was to explain the viability of free trade agreements (FTAs) between two countries in a political-economy framework. A simple extension to a three-country setting allows us to analyze whether FTAs are "building blocs" or "stumbling blocs." An illustration with specific functional forms serves to find conditions under which FTAs are, somehow, partial building blocs, i.e., a bilateral liberalization can be feasible when multilateral liberalization is not.

Introduction

A large number of preferential trade agreements (PTA) do exist nowadays all around the world. According to the World Trade Organization (WTO), more than 200 are in effect today. Almost all major countries are members of at least one PTA, and, most importantly, the majority of these agreements were originated during the last decade.

Bhagwati (1995) has called this scenario a "spaghetti bowl" of tariffs in which countries impose different tariff rates on the same good depending on its origin. In an earlier paper, Bhagwati (1991) addresses this issue by analyzing whether free-trade agreements (FTAs) are building blocs or stumbling blocs to the achievement of a broad multilateral agreement.

Since Viner's (1950) analysis on the welfare effects of customs unions, research interests in this topic have considerably caught the attention of international trade theorists. Viner pioneered the static analysis of trade agreements providing the message that these arrangements could harm both a member country and world welfare, i.e., they can be "trade diverting."[2]

There have been concerns recently in regards to the viability of a successful multilateral trade liberalization in a world that is largely populated by potentially harmful FTAs.[3] In this line, Krishna (1998) asks the political-economy question of whether FTAs have incentives to keep expanding with more members toward a multilateral liberalization, or, instead, they wish to keep new members out. On the other

hand, Aghion et al. (2007) address the question of regionalism versus multilateralism by investigating whether multilateral bargaining or sequential bargaining are more likely to lead to global free trade.

The "stumbling-bloc" view of FTAs has been supported, among others, by Bhagwati (1991, 1993) who finds that, even though FTAs may generate static welfare gains, they finally reduce the incentives to seek posterior trade liberalization. Yet, others such as Summers (1991) argue that deeper integration within a subset of countries may raise the chances for successful multilateral negotiations. An interesting recent work by Saggi and Yildiz (2006) finds both stumbling-bloc and building-bloc effects, and illustrates cases in which trade agreements are "partial building blocs," i.e., FTAs can improve welfare when multilateral liberalization is not attainable.

The focus of this paper is both on the incentive aspects that explain the formation of trade blocs and on the viability of a multilateral agreement. The approach followed belongs to the political-economy theory literature on international trade. In particular, this paper builds on a framework, first introduced in Grossman and Helpman (1995). They analyze the viability of an FTA between two countries approaching the political-economy problem by emphasizing the interaction between lobbies and an incumbent government. That paper considers both the case when the FTA must cover all bilateral trade and the case when some politically sensitive industries can be excluded from the agreement.

In Grossman-Helpman (1995), international relations involve two distinct stages of strategic interaction. In the initial stage, political competition among special interests in each country — the lobbies — determines the government's trade policy preferences. The second stage involves the bargaining process between the governments, which ultimately shapes the equilibrium agreement. The initial stage in which lobbies in a single country compete for the government's external policy makes use of the analytical framework previously introduced in Grossman and Helpman (1994). In that earlier model, lobbies offer policy-contingent campaign contributions to politicians, who make decisions on the basis of their own objectives. Thus, a country's policy stance reflects, on the one hand, the relative force of its special interests and, on the other hand, the government's concern for the welfare of the average voter.

According to this approach, an agreement may emerge when it creates profit gains for exporting sectors in excess of the losses incurred by import-competing sectors and any welfare losses to the average voter. Naturally, an FTA requires that the two governments give consent to the agreement. In this setting, the agreement is most likely to emerge when there is relatively balanced trade between both countries, and when the agreement provides mostly enhanced protection — exporting

sectors receiving high domestic prices in the partner country — rather than reduced protection — import-competing sectors receiving a lower domestic price product of the FTA.

It turns out that reduced protection may involve some trade creation whereas enhanced protection generates only trade diversion. Thus, the Grossman-Helpman analysis of FTAs establishes that the features raising the viability of an agreement also raises the likelihood that this agreement finally reduces social welfare. They also show that a set of industry exclusions might make an otherwise infeasible FTA politically viable. They study the determinants of the size of this set and identify the sensitive industries.[4]

This paper develops a three-country political-economy representation model in order to find conditions for the viability of a multilateral agreement. First, the model takes the two-country FTA game as the starting point to evaluate the prospects of ulterior multi-lateral negotiations. Second, the model studies the prospects of multilateral liberalization, departing from the status quo. A three-country set up allows us to move the focus of the analysis toward the question of whether trade blocs are building blocs or stumbling blocs. An illustration with specific functional forms serves to find conditions under which FTAs are, in some way, partial building blocs, i.e., a bilateral trade agreement can be feasible when multilateral liberalization is not.

The paper proceeds as follows. Section 2 describes the Grossman-Helpman's model of FTAs in order to introduce the framework used throughout the paper. Section 3 extends this model to a three-country setting in which the viability of successful multilateral negotiations is analyzed. This section extends formally the general analysis introduced in the preceding section. Section 4 assumes particular functional forms so as to illustrate how that model works in a world with the possibility of multilateral liberalization. Section 5 concludes.

The Grossman-Helpman Model of FTAs

A Review of the Analytical Framework

Consider two small countries and the rest of the world. Each country charges non-discriminatory most-favored-nation (MFN) tariffs, following WTO rules. There is a numeraire good 0 that is untaxed in each country, and n other goods. Initially, some of these goods are imported by one or both of these countries while others may be exported. Neither export subsidies are allowed in the model in recognition of WTO rules nor are export taxes. International prices are normalized to 1, thus domestic export prices are simply 1. As for the import goods, these may be subject to

import tariffs. Let τ_j^i represent 1 plus the initial tariff rate on good i in country j, for $j = A, B$. By normalizing international prices to 1, then these are the domestic prices of import goods in country j.

Assume that, after the conclusion of an FTA, the initial external tariff levels continue to apply to imports from nonmember countries. This is made according to WTO rules which establish that these tariffs must be no higher than those imposed before the agreement.[5] Article XXIV of the General Agreement on Tariffs and Trade (GATT) permits certain exceptions to the principle of MFN, provided that the agreement covers "substantially all trade". Although the interpretation of this article could be somewhat misleading, the first part of this model analyzes the viability of an FTA requiring that all goods be freely traded between the members. The second part will consider exclusions of sectors that might be sensitive to the agreement.

Each country has a (voting) population of 1. Individuals in each country have identical preferences

$$u(c) = c_0 + \sum_{i=1}^{n} u_i(c_i) \qquad (1)$$

where c_i denotes consumption of good i, and $u_i(.)$ is an increasing and concave function. Consistent with these preferences, there are n per capita demand for the n goods, $D_i(q_i)$, and one per capita demand for good 0, $y - \sum_{i=1}^{n} q_i D_i(q_i)$, where q_i is the domestic consumer price of good i and y is the individual's spending.

The production of a unit of good 0 requires only one unit of labor whereas each of the n goods is produced under constant returns to scale with labor and a sector-specific factor. Since the domestic price of good 0 is normalized to 1, the competitive wage must equal 1 provided there is some production of this good initially. Denote with $\Pi_i(p_i)$ the profits earned by the specific factor in sector i, where p_i is its domestic producer price. Denote by X_i the aggregate supply of good i, which is given by $X_i(p_i) = \Pi'_i(p_i) > 0$ for each i.

Assume that the ownership of specific factors is highly concentrated and consider the extreme case where these factor owners are a negligible fraction of the population. Also, assume that in each sector i these factor owners form a special-interest group (a lobby) which takes political action so as to maximize their joint welfare.

The incumbent government has as its only function the decision on trade policy, which, in this case, reduces to whether accept or reject the FTA. Politicians in the government receive contributions from the lobbyists who seek to influence their decision. The government does not only value these contributions, but also cares about aggregate welfare.

Assume that the government's objective has a simple linear form

$$G = \sum_{i=1}^{n} C_i + aW, \qquad (2)$$

where C_i is the contribution of lobby i, W is aggregate welfare, and a is a non-negative parameter reflecting the government's welfare maximizing behavior relative to contributions. In turn, the individual's surplus from consuming good i is

$$S_i(q_i) \equiv u_i\left[D_i(q_i)\right] - q_i D_i(q_i), \qquad (3)$$

The consumer also receives a lump-sum transfer from the government determined by the equally rebated, total tariff revenues. Finally, aggregate welfare is given by

$$W = L + \sum_{i=1}^{n} \Pi_i(p_i) + \sum_{i=1}^{n} (\tau_i - 1)Mi + \sum_{i=1}^{n} S_i(q_i), \qquad (4)$$

where the first term, L, is the aggregate labor supply, and M_i are imports in sector i. Remember that if the wage is 1, then W will be the sum of labor income, profits, tariff revenues, and total consumer surplus.

Since factor owners capture only a negligible fraction of the consumer surplus and receive only a negligible fraction from tariff revenues, the objective of these owners may be approximated by $\Pi_i(p_i) - C_i$, i.e., profits net of contributions.

The domestic political game comprises two stages. In the first stage, lobbies make their move, offering financial support — the contributions — to the incumbent government. These contributions are directly linked to the government's policy, which is simply the acceptability or rejection of the trade agreement. In the second stage, the government has two choices: whether to pursue the FTA or not. In the end, a factor-owner policy-contingent contribution schedule will only encompass two numbers: C_{iN}, representing the contributions in favor of the status-quo, and C_{iF}, representing the contributions in favor of the FTA.

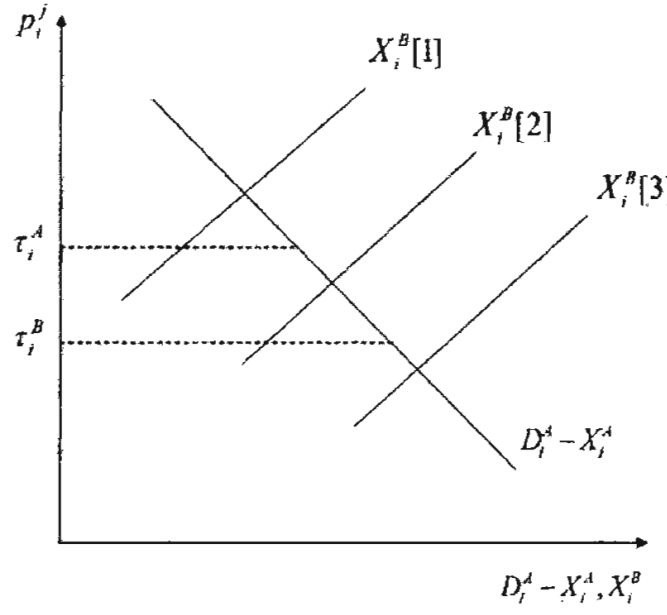
Finally, assume that each lobby offers in contributions no more than what it stands to gain if the government were to follow its bidding.

Effects of an FTA

Consider the effects of an FTA on the interests of the different economic agents. To begin with, focus on a single industry i where, without loss of generality, assume that $\tau_i^A > \tau_i^B \geq 1$. That is, the domestic price in country A is greater than that

in country B, which in fact is no lower than that prevailing in the rest of the world. Figure 1 depicts the demand for imports by country A and three possible locations of country B's supply curve — locations that depend on the endowments of the specific factor used in this industry.

Figure 1
The Free Trade Agreement



Consider two effects of an FTA on country members. On the one hand, if country B's supply of good *i* is relatively small to suffice country A's import demand, as the case of X_i^B [1] then the equilibrium producer price received by industries in the lower-tariff country will rise toward τ_i^A. This is the case of *enhanced protection.* In contrast, the endowment of specific factor in country B may be so large that it suffices to satisfy A's import demand at the lower price $\tau_i^B i$ — situation depicted by supply curve X_i^B [3]. In this case, A's import-competing industries see their price falling as well as their profits. This is the case of *reduced protection.* There is also an intermediate case whenever the supply in country B lies between the higher and the lower price, with the results being a combination of the two previous effects.

In order to illustrate the two extreme cases, consider now an industry that experiences *enhanced protection.* Producers in B benefit from their preferential access to A's market whereas producers in A are unaffected, given that their domestic price does not change. Regarding the welfare in A, the only effect is the decrease in tariff revenues, which is an adverse effect product of the diverted trade from the more efficient rest of the world to the partner B. The total welfare change in A is

$$\Delta W_i^A = -(\tau_i^A - 1)X_i^B(\tau_i^A). \quad (5)$$

In country B, aggregate welfare necessarily rises because of two components: first, profits of the export sector increase given the higher price received in market A; second, the country substitutes domestic supply with international supply, thus gaining from an increase in tariff revenues. The total welfare change in B is

$$\Delta W_i^B = \Delta \Pi_i^B + (\tau_i^B - 1)X_i^B(\tau_i^B). \quad (6)$$

It is straightforward to show that the welfare loss in A exceeds the welfare gain in B, which reveals the global efficiency cost of the *trade diversion* effect.

As for the *reduced protection* case, one can see that exporters in B gain nothing from the agreement, while producers in A bear the increased import competition. Since all imports in A come from B now, tariff revenues from this sector fall to zero. However, average voters in this country gain as consumers, since the domestic price in A decreases toward τ_i^B. The change of aggregate welfare in A is

$$\Delta W_i^A = \Delta \Pi_i^A - (\tau_i^A - 1)M_i^A(\tau_i^A) + S_i^A(\tau_i^B) - S_i^A(\tau_i^A), \quad (7)$$

which may be positive or nonpositive.

Country B receives only the extra tariff revenue generated by the partial substitution of domestic supply with foreign supply. Welfare change in B is

$$\Delta W_i^B = (\tau_i^B - 1)M_i^A(\tau_i^B). \quad (8)$$

It is easy to see that welfare gains for the FTA members are assured in the reduced protection case. This arises from the *trade creation* effect of trading blocs in this set up.

As regards to the *intermediate case*, it simply combines features of the first two scenarios, and the result is ambiguous in terms of the joint welfare of the bloc.

Equilibrium FTAs Without Exceptions

First, I look for the conditions under which an FTA will be unilaterally supported in each country. Then, I study the conditions under which the negotiations between countries lead to an equilibrium agreement.

Suppose that no exclusions (or side-payments) are allowed, so that either all industries are included in the FTA or the status quo prevails. Under this setting, a necessary and sufficient condition for an FTA equilibrium to occur is that both countries unilaterally favor it. Thus, consider first a game between lobbies and the government in each country determining the conditions for a unilateral stance that either favors the agreement (outcomes will be denoted with subscript *F*), or favors the status quo (outcomes will be denoted with subscript *N*).

At this point, I will apply a simplified version of Grossman-Helpman's model developed by Goldberg and Maggi (1999). In this version, a unilateral stance equilibrium results simply from the maximization problem of the joint surplus of the government and domestic lobbies — which I loosely call the "political welfare". Therefore, the government unilaterally will favor an FTA if and only if,

$$\sum_i \Pi_{iF} + aW_F \geq \sum_i \Pi_{iN} + aW_N \qquad (9)$$

Thus, the government will simply favor the agreement if the political welfare under the FTA weakly exceeds the political welfare under the status quo. It is certainly possible that inequality (9) fails to hold in either of the two countries, making the FTA infeasible. It is shown that the viability of an FTA that does not allow for industry exclusions depends on how balanced is the trade between potential members of the agreement. In words of Gawande et al. (2005), "*an FTA among countries is most likely when trade between them is sufficiently 'balanced'.*" In showing this result, Grossman and Helpman consider a special case with specific functional forms and parameters. In fact, I will work on that example below in order to put some structure to the general specification of the three-country setting.

Equilibrium FTAs With Exceptions

Grossman and Helpman (1995) show how industry exclusions may make an otherwise infeasible FTA politically viable. At this stage, consider the game between lobbies and the government in which a unilateral stance for an FTA with exclusions is determined.

Denote as $\varepsilon(T)$ the set of politically optimal exclusions, where T is assumed to be the maximum number of excluded industries.[6] If there was no such limit T, then all industries having the joint welfare of lobby and government higher in the status quo than under the FTA would belong to that set. For future consideration, denote the change in joint welfare of sector i as

$$g_i = \Delta\Pi_i + a\Delta W_i, \qquad (10)$$

where $\Delta\Pi_i = \Pi_{iF} - \Pi_{iN}$ and $\Delta W_i = W_{iF} - W_{iN}$. Notice that if no restrictions were imposed, the set of exclusions would comprise all industries for which $g_i < 0$.

Consider the case where there is indeed a constraint T on the number of exclusions. Then, it is not hard to see that when this constraint binds, the T excluded industries would be those with the most negative joint welfare change. Grossman and Helpman show that a unilateral stance for an FTA does exist if and only if

$$\sum_{i\in\varepsilon}(\Pi_{iN} + aW_{iN}) + \sum_{i\notin\varepsilon}(\Pi_{iF} + aW_{iF}) \geq \sum_i \Pi_{iN} + aW_{iN}. \qquad (11)$$

The central finding is that while (9) may fail to hold, inequality (11) can be satisfied. That is, whereas a unilateral stance favoring an FTA without exclusions may fail, a unilateral stance for an FTA in which the most sensitive industries can be excluded may favor the agreement. Following Gawande et al. (2005), one can rewrite (9) as $\sum_i g_i \geq 0$, and (11) as $\sum_{i\notin\varepsilon} g_i \geq 0$. Since the latter excludes the sectors with most negative joint welfare changes, it is clear that inequality (11) is easier to be satisfied.

In this stance, import-competing industries are the most politically sensitive sectors in the economy. Thus, they are the first candidates to push the government for being excluded from the agreement. In contrast, industries that can eventually export to the partner country at the expense of the rest of the world are the most favored by the agreement and they make contributions to the government in order to be included.

Consider now the next stance where both governments negotiate for the agreement. Assuming that unilateral stances in each country favored an agreement, at this stage both governments bring their lists of exclusions to the bargaining table in order to get a favorable FTA with their sensitive sectors excluded. In this sense, lobbies anticipate each possible outcome in making their bids.

Now, the question is which sectors will be granted exclusions in an equilibrium agreement. To solve this problem, Grossman and Helpman treat the negotiation process as a cooperative bargaining game and apply a simple Nash bargaining solution. Therefore, an equilibrium agreement will be designed so that it maximizes a weighted average of the surpluses of the two negotiating governments.

Since both governments have always the option to reject the agreement, their surpluses are calculated with respect to the status quo. Technically, the "threat point" in the Nash problem will be the joint welfare of government and domestic lobbies under the pre-FTA scenario.[7]

From the resulting equilibrium, it follows that *exclusions are granted to industries for which the weighted difference between the political benefits in the exporting country and the political costs in the importing country is most negative.* One can also identify the sector excluded through an ordering that depends only on aggregate conditions and on supply and demand characteristics. It turns out that the same factors that determine the politically optimal set of exclusions in each country at a unilateral stance also enter into the configuration of the set of exclusions in the negotiation between partners. The following section compares these results with the results one finds in a three-country model.

The Multilateral Trade Agreement

In the previous section, I described the Grossman and Helpman's (1995) model of FTAs, where the analysis is centered on two small countries and the rest of the world. Now, I consider a world of three countries denoted by *A, B*, and *C*, and study the viability of a multilateral trade agreement. The first subsection will assume that two of them are already members of an FTA. The second subsection will evaluate the prospects of a multilateral agreement, starting from the status quo. The next task is to compare which of both positions (either FTA or status quo) are closer to the possibility of global free trade. I could have alternatively considered a more general problem with endogenous formation of either an FTA between any two countries or a multilateral agreement. However, since my interest is to characterize the prospects of multilateral liberalization both before and after the formation of an FTA, it is beyond the scope of this study to endogenize the country's choice of a partner or group of partners. In particular, my final goal is to analyze the effects of preferential trade agreements formed in the Grossman-Helpman's context on the viability of a multilateral liberalization.

Multilateral Liberalization with FTAs

As in the preceding section, I begin here with the analysis of the viability of a trade agreement without exceptions. First, consider the game between lobbies and the government. Also as before, the maximization problem of the joint surplus of government and domestic lobbies brings about a unilateral stance equilibrium in each country. Assume, without loss of generality, that countries *A* and *B* are members of an FTA. Then, governments *A* and *B* will unilaterally favor a multilateral agreement (outcomes are denoted with subscript *M*) if and only if,

$$\sum_i \Pi^j_{iM} + aW^j_M \geq \sum_i \Pi^j_{iF} + aW^j_F, \text{ for } j = A, B, \qquad (12)$$

i.e., if the political welfare from multilateral liberalization is greater than that from the FTA in each country. Country *C* will unilaterally favor a multilateral agreement if and only if,

$$\sum_i \Pi^C_{iM} + aW^C_M \geq \sum_i \Pi^C_{iN} + aW^C_N, \qquad (13)$$

i.e., country C will favor an agreement if and only if the political welfare under multilateral liberalization is greater than the one under status quo.

The analysis of the viability of a multilateral trade agreement with no exceptions turns out to be straightforward. Now, consider the viability of an equilibrium multilateral trade agreement with industry exclusions, by first introducing the game between lobbies and government at a unilateral stance.

I denote by *E(T)* the set of politically optimal exclusions to the multilateral agreement. This set may differ with respect to the previous set of exclusions from the FTA — the set $\varepsilon(T)$.[8] Continue denoting the change in joint welfare by $g_i = \Delta\Pi_i + a\Delta W_i$, where the changes are expressed with respect to the FTA in countries *A* and *B*, and with respect to status quo in *C*.

It is straightforward to replicate inequality (11), which shows the conditions for a unilateral stance bilateral agreement with exclusions, for the multilateral case. Thus, the multilateral liberalization is favored in countries *A* and *B* if and only if

$$\sum_{i\in\varepsilon}(\Pi^j_{i\tilde{N}} + aW^j_{i\tilde{N}}) + \sum_{i\in\varepsilon}(\Pi^j_{iM} + aW^j_{iM}) \geq \sum_{i\in\varepsilon}(\Pi^j_{iN} + aW^j_{iN}) + \sum_{i\notin\varepsilon}(\Pi^j_{iF} + aW^j_{iF}), \qquad (14)$$

for $j = A, B$.

On the other side, country *C* favors the agreement if and only if

$$\sum_{i\in\varepsilon}(\Pi^C_{iN} + aW^C_{iN}) + \sum_{i\notin\varepsilon}(\Pi^C_{iM}) \geq \sum_i(\Pi^C_{iN} + aW^C_{iN}). \qquad (15)$$

The subscript "$\tilde{N}$" in expression (14) is used to distinguish between the outcome of industries excluded from the multilateral agreement and that of industries excluded from the FTA — expressed with the subscript "*N*". Notice that a particular sector in either of countries *A* or *B* can contribute in two ways for an exception to the multilateral agreement. It can contribute to continue with the behavior as in status quo prevailing before the FTA was approved, as an industry already excluded

from the FTA. Or, it can contribute to stay "inside" the FTA, which still is a possible scenario if the multilateral agreement is rejected. Once again, one can observe that, while inequality (13) for country *C* may fail to hold, inequality (15) can hold if one allows for the most sensitive industries to be excluded. Notice that this may not be the case for countries *A* and *B*, since inequality (14) introduces two sets of exclusions, one arising from the FTA and the other arising from the multilateral agreement.

Now consider the next stage where all the governments bargain for the multilateral agreement. As in Grossman and Helpman (1995), each government exposes its list of exclusions at the bargaining table. As in the previous section, I will analyze the negotiation process through the implementation of a Nash bargaining problem. It has been proved that the properties of a Nash bargaining solution with two players continue to apply in an *n*- player bargaining game (see Krishna and Serrano, 1996). Then, the equilibrium agreement will be designed to maximize a weighted average of the "surpluses" of the three negotiating governments.

Since the governments always have the option to reject the agreement, their surpluses are calculated, in the cases of countries *A* and *B*, with respect to the FTA and, in the case of country *C*, with respect to status quo. In other words, the "threat points" of the Nash problem will be the joint welfare of government and domestic lobbies before the multilateral liberalization is negotiated.[9]

Similar to the result obtained in Grossman-Helpman's FTA model, we find that *exclusions are granted to industries for which the weighted difference between the political benefits in the exporting countries and the political costs in the importing countries is most negative.* I further look for identifying the industry exclusions by performing an ordering that depends only on aggregate conditions and on supply and demand characteristics. Once again, it turns out that the same factors that determine the politically optimal set of exclusions at a unilateral stance also determine the set of exclusions in the multilateral negotiation process.

Multilateral Liberalization from Status Quo

What are the chances that the three countries liberalize trade multilaterally, provided that none of them is member of an FTA? In this case, governments *A, B,* and *C* will favor a multilateral agreement without exclusions if and only if,

$$\sum_i \Pi^j_{iM} + aW^j_M \geq \sum_i \Pi^j_{iN} + aW^j_N, \text{ for } j = A, B, C, \qquad (16)$$

i.e., if the political welfare from multilateral liberalization is greater than that from status quo in each country.

Furthermore, the multilateral liberalization with exclusions is described by means of a Nash bargaining problem, where the surpluses of the three governments are calculated with respect to the status quo.[10]

The question, however, is whether the countries have more incentives to liberalize trade departing from the FTA position or from status quo. For this analysis, naturally, it is sufficient to consider the *pure cases*, i.e., the cases without exclusions to either the FTA or the status quo. This is so because, for each case, we must compare the changes in the political welfare toward global liberalization. If we, for example, consider exclusions at the stage of negotiations for the FTA, then the changes in political welfare from the FTA position will be such that those corresponding to the excluded industries will cancel out with the changes in political welfare from the status quo position. If we, for example, consider exclusions at the stage of negotiations for the multilateral liberalization, then we will find the following scenario. Suppose that, without exclusions permitted, the prospects of multilateral liberalization are higher from the status quo position than from the FTA position. Then, for a particular set of exclusions at the FTA that help favor the multilateral agreement (the most sensitive ones), we would also find another set of sectors excluded at the status quo level that help favor the global agreement (also the most sensitive ones), and will enhance the prospects to reach the accord. The reverse case also holds.

Following the preceding reasoning, and operating on (12), (13) and (16), one obtains the natural answer that the sole presence of a political-welfare improving FTA will lower the prospects for multilateral liberalization with respect to the status quo [inequality (9) must hold for both A and B].

In the next section, I will show that under certain conditions an FTA is viable (with and without exceptions), yet, the multilateral liberalization is not feasible under any circumstance.

An Illustration

In order to narrow the set of general results found in the preceding section, I will work here with a particular specification of the model introduced originally in Grossman and Helpman (1993). I will depart from that setting to study both the determinants of FTAs and the determinants of multilateral liberalization.

Suppose that households in the three countries share identical utility functions, where all the non-numeraire goods enter symmetrically and each $u_i(.)$ is quadratic. Then, the aggregate demand for any good i in country j has the linear form

$$D_i^j(q_i^j) = D - bq_i^j, \tag{17}$$

for $i = 1,\ldots, n$ and $j = A, B, C$, where D and b are both positive parameters.

Assume that the supply of each good is symmetrically inelastic in both countries A and B. The first country has supply $X_i^A = \theta X$ in $s \times n$ industries, and $X_i^A = (1 - \theta)X$ in $(1 - s) \times n$ industries. The second country has supply $X_i^B = (1 - \theta)X$ in $s \times n$ industries, and $X_i^B = \theta X$ in $(1 - s) \times n$ industries. The parameter s indicates the fraction of a type of industries in each country, whereas the parameter measures output imbalance in any one sector, i.e., the relative size of output in any sector in each country. Without loss of generality, consider $\theta > 1/2$ and $s \geq 1/2$. Assume that country C is an exporter of all goods, and that it can supply any quantity at given world prices standardized at 1. This assumption is introduced in the illustration in order to avoid terms of trade effects created by externalities that may emerge from the formation of any agreement.

The illustration consists of two stages. In the first stage, I will analyze the economic effects of an FTA between A and B. As one expects, this does not affect country C's welfare since the international price is unchanged. Later, I will focus on the viability of multilateral liberalization between A, B, and C. It is clear that, once again, this will not affect outcomes in C, thus this country will be indifferent toward the agreement. Further, I will study the scenario where countries A, B, and C evaluate their prospects for multilateral agreement, starting from status quo. Finally, I will contemplate the cases in which sets of industries are allowed to be excluded from the agreements.

The viability of any agreement, whether bilateral or multilateral, depends on the initial structure of MFN tariffs. In this sense, assume that tariffs initially protecting the import-competing industries in each economy result from a lobbying game as derived in Grossman and Helpman (1994). Further, suppose that politicians in each country place the same weight a on aggregate welfare. Thus, given the set of assumptions made so far, we obtain the following domestic prices in A and B:

$$\tau_i^j = 1 + \frac{x_i^j}{ab}, \tag{18}$$

for $j = A, B$, and for all sectors in which imports are positive in the initial equilibrium. Regarding country C, remember that being the exporter of all goods implies that $\tau_i^C = 1$ for all i.

Grossman and Helpman (1995) emphasize that different types of outcomes may emerge in this example depending on the parameter values. According to this idea, we can examine three different sets of parameter restrictions illustrating some relevant cases that may appear.

I will focus on one of those sets of parameters in order to study the case in which an FTA certainly emerges in the first step. This is the case in which all sectors experience *enhanced protection*. For the remaining sets of parameters, all sectors experience *reduced protection*, and an FTA will not be feasible, even with exceptions. Moreover, it is clear that a multilateral liberalization will not be feasible either, as they would also imply reduced protection for all industries, in both countries A and B.

Viability of an FTA

Suppose that A and B start negotiating on an FTA. Consider the following restriction on the parameters[11]

$$X < D - b(1 + \frac{\theta X}{ab}). \tag{19}$$

Under this condition, all n goods are imported in both countries in the initial equilibrium. Country A has the higher import tariff in the fraction s of industries where its supply is θX, while country B has the higher import tariff in the remaining sectors. Under an FTA, each country will import from its partner all goods on which their MFN tariffs are higher. Then, A would import from B a fraction s of goods, while B would import from A the remaining goods. Also, the restriction above implies that output in the low-tariff country would not suffice to satisfy import demand in the partner country at its pre-FTA domestic price. As a result, all sectors will experience *enhanced protection*.

One can calculate the contribution of both types of industry to the change in the joint welfare of government and lobbies from the agreement. Given these contributions, one finds that an FTA is supported in country B for every $s \geq 1/2$, while country A will favor the agreement if and only if

$$s \leq \frac{1}{2} + \frac{\theta - 1/2}{2\theta - 1 + 2a\theta} < 1. \tag{20}$$

Notice that inequality (20) will only be satisfied for s sufficiently close to 1/2.

Consider now the possibility that governments grant exclusions to a number of sensitive industries. The Grossman-Helpman's approach provides, through this illustration, the idea that exceptions can save an otherwise unfeasible FTA. Consider the proposal to exclude a number E^A of sectors in which A would import from B, and a number E^B of sectors in which B would import from A, and let $E^A + E^B \leq E$ be the WTO rule.

Recalculating the joint welfare change of government and lobbies in country A under the possibility of exclusions, we obtain the following range of values of s for which an FTA would be feasible:

$$s \leq \frac{1}{2} + \frac{\theta - 1/2}{2\theta - 1 + 2a\theta} + \frac{a\theta E^A - (2\theta - 1 + a\theta)E^B}{n(2\theta - 1 + 2a\theta)}. \qquad (21)$$

It can be shown that if $E^A > (2\theta - 1 + a\,\theta)E^B/a\,\theta$, then inequality (21) implies an expansion of the range of s for which the agreement is accepted by A. At the same time, if $E^A < [E^B a\theta + (2s - 1)na\theta + sn(2\theta - 1)]/(2\theta - 1 + a\theta)$, then the FTA with exclusions is also supported by government B. This is roughly illustrating the fact that there are values of s for which the FTA would be rejected without sectors exclusions, but favored with them. In particular, one can show that if $(2s - 1) < E/n$, then the FTA with $E^A = (2s - 1)n$ and $E^B = 0$ satisfies WTO rules and politically dominates the status quo. However, this is not the only set of exclusions that allow for an equilibrium agreement.

So far, we have revisited a particular specification of the model analyzed in Grossman and Helpman (1993). Through this illustration, it is shown that there are cases in which an FTA would fail if all trade has to be included, while it might be preferred if exclusions are allowed. It remains to show that both governments engage indeed in an efficient negotiation process. However, one can be safe from this particular issue, because there are in fact different alternatives assuring that a certain negotiation process would eventually lead to an equilibrium set of exclusions and, consequently, to the acceptance of the agreement in both countries.[12]

The Viability of a Multilateral Agreement

Now, I will study the viability of a multilateral agreement among countries A, B, and C. First, I consider the prospects for multilateral liberalization, taking as given that an FTA between A and B has been formed already. For this purpose, I will continue with the assumption that bilateral agreement arises from (and creates) *enhanced protection.* I will begin by studying the viability of an agreement on all

trade and, later on, I will analyze the case where a set of industries can be excluded from the agreement. Second, I consider the prospects for multilateral liberalization, starting from status quo, i.e., assuming that the three countries engage in only one round of multilateral negotiation.

In the first case, notice that all industries in country A and B will experience reduced protection after the multilateral agreement, since all goods are exported by the low-price country C. As a result of the multilateral liberalization on all trade, the contributions of the two types of sectors to the change in the joint welfare of both countries are negative, for any previously configured set of sectors excluded from the FTA. This gives us the first result from this illustration.[13]

> ***Result 1:*** *The multilateral trade agreement without exceptions is not favored either in A or B, for any set of exceptions that may have arisen in the equilibrium FTA.*

Consider now the possibility of allowing for exclusions to the multilateral liberalization. In this case, the WTO rule would admit $E^A + E^B + E^C \leq E$. However, country C will be indifferent about the agreement as it is the exporter country. Thus, one can further set $E^C = 0$.

According to the previous discussion, now assume that the first-step negotiation on the FTA provided the least set of exclusions: $E^A = (2s - 1)n$ and $E^B = 0$. One expects that the industries excluded from the original FTA continue to be excluded from the multilateral liberalization, given their relative high cost to the welfare of both A and B. Denote as $E^A_M \subset E^A$ the set of exclusions to the multilateral agreement, out of the set of exclusions from the FTA stage. Setting the least set of exclusions possible, $E^A_M = (2s - 1)n$, we find that there is no E^A and E^B such that the joint welfare changes in both countries A and B are positive at the same time. This leads to the second result from this illustration.

> ***Result 2:*** *The multilateral trade agreement with industry exclusions is not favored either in A or B, for any set of exceptions that may have arisen in the equilibrium FTA.*

This result comes from the fact that any increase in the set of exclusions that may favor the agreement in A leads to a rejection by country B, and vice versa. Roughly, this occurs because both countries experience *reduced protection* in all industries from the multilateral liberalization.

Now the question is, was the multilateral liberalization feasible before countries *A* and *B* have engaged in an agreement? In other words, did the FTA between these two countries impede the multilateral agreement? In what follows, I will analyze the viability of a multilateral agreement starting from status quo.

We will arrive at the conclusion that, beginning from a position where no country has a trade agreement, the status quo is preferred to the multilateral liberalization in both countries, while country *C* is still indifferent. Furthermore, the rejection of the agreement arises because countries *A* and *B* experience reduced protection in all their industries. In this sense, even though aggregate welfare increases in both countries as a result of a fall in prices, the decrease in profits from the import-competing industries is high enough to make the political welfare changes negative. If one allows for exclusions to the *grand accord*, rejection results do not change. This leads to the third result from this illustration.

> ***Result 3:*** *The multilateral trade agreement, either with industry exclusions or without them, is not feasible from the status quo position.*

Given results 1 and 2, the third result completes the set of (political) conditions supporting the view of FTAs as being *partial building blocs*, i.e., these agreements can be feasible when the multilateral agreement is not.

To summarize, I have revisited a particular specification first appeared in Grossman and Helpman (1993), where an FTA between two countries (*A* and *B*) is feasible under certain conditions. They show that the prospects for a bilateral agreement increase when one allows for a number of exclusions in the sensitive import-competing sectors. Afterwards, I have analyzed the viability of a multilateral agreement by introducing a third country (*C*). Based on the assumptions made above, it is not required that country *C* be active in the negotiations process because it is indifferent about any agreement. In spite of this simplicity, this setting allows us to think about the possibilities that arise for country *A* and *B* to coordinate a reduction of tariffs.

We have observed that the political conditions do not help in providing a good reception toward the agreement in either *A* or *B* (with exclusions and without them). The reason is the presence of a *reduced-protection* effect in all sectors in both economies. However, global free trade was not feasible from status quo either. As such, one can assert that, for a special characterization of the Grossman-Helpman framework, FTAs become *partial building blocs*.

Concluding Remarks

The big picture issue of this paper is related to the dynamic path of trading blocs and whether preferential trade agreements are *building* or *stumbling* blocs.

To address this issue, I have initially departed from Grossman and Helpman's (1995) model of FTAs. That model was designed to explain the viability of a free trade agreement between two small countries where governments not only maximize aggregate welfare but also take into account the contributions from domestic special-interest groups. The model also provides the conditions needed for the agreements to be politically viable with some exceptions on sensitive industries.

I have taken that approach to explain a bilateral formation and have extended it to study the viability of a *grand accord* with a third potential partner. The extension is intended to investigate the conditions for multilateral liberalization to be politically viable both from a position where an FTA already exists and from status quo.

We have observed that an extension to the model's general form does not help us to determine whether an FTA is a building or a stumbling bloc. However, we do find that, provided an FTA exists, the chances for favoring a multilateral agreement will fall. One might guess that finding a global agreement with exclusions is less likely than finding an FTA with exclusions. This stems from the fact that the set of outcomes in which an agreement is favored on a multilateral bargaining must shrink. This conjecture is not proved here, and is left for future research. However, an illustration with specific functional forms helps us characterize the viability of a multilateral liberalization.

For a set of restrictions on the parameters, *reduced protection* arises on all industries if the FTA is formed. In these cases, results are not appealing since a bilateral agreement does not emerge in the first stage and neither multilateral agreement is feasible from status quo. This happens because of the assumptions made on the two negotiating countries, and in particular, because reduced protection leads industries to successfully pressurize the government in favor of status quo.

For another set of restrictions, *enhanced protection* arises from the FTA. In these cases, alternatives exist in which an FTA is feasible and, furthermore, these alternatives expand when exclusions are permitted. Nevertheless, I have shown that, at a second-stage, a multilateral liberalization is not viable under any circumstance: with exclusions or without them. The multilateral liberalization is also not feasible from status quo.

To sum up, there exists a set of conditions under which an FTA acts, in a limited sense, as a *partial building bloc*: when the global accord is not feasible under

any scenario, a political-welfare improving FTA can be attainable. A bilateral agreement does not raise aggregate welfare for it generates enhanced protection. Neither it serves for the signing countries to get closer from multilateral liberalization. Yet, the results imply that, under certain conditions, this is the situation to which countries would eventually converge. That is, there will be a scenario with a large number of FTAs, where governments and lobbies maximize their joint welfare. In order to have a more robust answer regarding the viability of a multilateral trade agreement, we must relax the strong assumptions made in the illustration. Nonetheless, I believe this work constitutes a step forward in our understanding of the *dynamic-path* issue of trading blocs from a political-economy perspective.

Notes

1. This is a shortened version of a paper written under a grant from the Private Enterprise Research Center at Texas A&M University. I am grateful to Kishore Gawande for numerous conversations on this topic. I also thank Amy Glass, Kamal Saggi, the Editor, an anonymous referee, and seminar participants at Texas A&M University and Sam Houston State University for helpful comments. All errors are my own.

2. In what follows, I will use indistinctly the terms FTA and PTA. The latter is more general in the sense that it implies a reduction of external tariffs among members (including, of course, the possibility of lowering tariffs to zero), whereas the former implies the simple elimination of members' tariffs. Since this work will treat any agreement as simply removing barriers, then both agreements are identical. Note that, in addition, one may consider other types of trade agreements such as a customs union (an agreement whereby all members impose a common external tariff), yet, I restrict the analysis here to the FTA case.

3. See Panagariya (2000) for a survey of this literature.

4. In practice, the size of the set of exceptions should not violate the WTO clause which states that an FTA should cover ìsubstantially all trade".

5. Grossman and Helpman (1995, pp. 669) recognize the importance of relaxing this assumption. In a paper related to this literature, a different approach taken by Ornelas (2005) allows for external tariffs to be endogenous after a trade agreement. He shows that strategic and distributive effects of an FTA reduce the importance of politics in defining a multilateral trade liberalization. An extension on this line, however, is beyond the scope of this paper.

6. This restriction, which in a sense is obeying WTO rules, can be more general. For instance, another restriction could be expressed as a limit on the fraction of excluded trade.

7. The reader may find the details of the formal problem in Grossman and Helpman (1995).

8. Assume, for simplification, that the number of restrictions T is the same as the one for the FTA.

9. The formal problem is described in a Technical Appendix, which can be obtained from the author upon request.

10. The formal problem is described in the Technical Appendix.

11. See Grossman and Helpman (1993) for the details regarding the origin of these restrictions.

12. Grossman and Helpman (1993) suggest that this bargaining process can be modeled as an alternating bargaining game a la Binmore et al. (1986). On the other hand, as I mentioned above, Grossman and Helpman (1995) solve this bargaining problem by applying a Nash solution.

13. The detailed proofs of these results can be obtained from the author.

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The Implications of a South-South Customs Union on Tariffs, Welfare, and the Prospect of Global Free Trade*

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Abstract

Following the failure of multilateral trade negotiations at the Cancun meeting and the Doha Round, developing countries have pursued an alternative in so-called "south-south" trade agreements. Since these agreements lead to trade diversion from efficient north (developed) countries to less efficient south (developing) partners, there have been widespread concerns regarding their welfare implications. Using a three country oligopoly model of trade, we first examine statically the implications of a south-south customs union (CU) on the pattern of tariffs and welfare. We find that south countries always have incentives to form a CU that reduces the welfare of the north country. Moreover, when south firms are sufficiently inefficient relative to north firms, a south-south CU leads to a large trade diversion effect and reduces world welfare. We further show that, in a repeated interaction model, free trade is less likely to be sustainable under the south-south CU relative to no agreement.

Introduction

By permitting a group of member countries of the World Trade Organization (WTO) to form a preferential trade agreement (PTA) wherein these countries extend tariff concessions to each other but not to other WTO member countries, Article XXIV of the General Agreement on Tariffs and Trade (GATT) provides an important exception to the most-favored-nation (MFN) clause (contained in Article I of GATT).[1] Since the notion of non-discrimination as specified by the MFN clause is at the heart of the WTO system, the existence of Article XXIV has not been without controversy.[2] PTAs are so widespread today that MFN treatment appears to be more of an exception rather than a norm and, thus, far from playing a pivotal role in multilateral trade liberalization. According to the WTO (2009), there are over 200 PTAs in force today and almost all major countries participate in one or more PTAs of various types. Prominent examples of PTAs include the North American Free Trade Agreement (NAFTA), the South American Common Market (MERCOSUR), the Association of

South East Asian Nations (ASEAN) Free Trade Area, the Andean Pact, and numerous agreements of the European Union with other countries.

The failure of multilateral trade negotiations at the Cancun meeting and the Doha Round led the developing countries to look for an alternative in so-called "south-south" PTAs. As Stiglitz (2003) argues, even though there is more to gain from North-South trade in theory, just as north-north trade agreements have intensified, there is no question that south-south trade agreements can also flourish. Bhagwati and Panagariya (1996), Ray (1998), and Das and Ghosh (2006) contend that the majority of the PTAs have been formed between similar countries (so-called north-north agreements between developed countries and south-south agreements between developing countries) rather than between developed and developing countries (north-south agreements).

This paper aims at addressing the following questions. What are the implications of a south-south customs union (CU) on the pattern of tariffs and the welfare of the member and non-member countries and the world as a whole? Do these agreements facilitate multilateral trade liberalization process? To address these questions, we develop a three-country oligopoly trade model with one north (developed) and two south (developing) countries. We begin with the premise that the north firms have a superior production technology compared to that of south firms.[3] That the above questions are important is evident from the recent proliferation of PTAs between developing countries. As per WTO, the number of PTAs between developing countries has increased dramatically over the last two decades: 70 new such agreements have been formed between 1990 and 2003 and they account for more than 50 percent of all new trade agreements, including those not notified to the WTO. Important examples include MERCOSUR in South America, South Asia Free Trade Area (SAFTA), the Group of Three, and South Africa Customs Union (SACU). Recently, three major south countries: India, Brazil, and South Africa, have taken major steps leading to south-south cooperation.

In the literature, following Jacob Viner's (1950) classic analysis, economists as well as policy-makers have extensively discussed the static and dynamic distortions created by preferential trade liberalization. It has been argued that PTAs can lead to *trade creation* if member countries switch from inefficient domestic producers and import from more efficient producers in other member countries of the PTA. On the other hand, *trade diversion* takes place when member countries substitute efficient, low-cost imports from non-member countries with less efficient imports from member countries. The net welfare effect of a PTA depends upon which of these two effects dominate. Since south member countries substitute efficient im-

ports from non-member north countries with less efficient imports from south partners, there has been widespread concern regarding the welfare implications of south-south CU. Grossman and Helpman (1995) claim that the formation of trade diverting PTAs is the most likely case. Further, Schiff and Winters (2003) argue that a PTA between two small developing countries is likely to generate only trade diversion and no trade creation. The rationale for this argument is that the increased export profits in such a PTA stem mainly from trade diversion via an inefficient transfer of tariff revenue to the bloc's exporters. This argument is contested by Ornelas (2005) who shows that the exporting rents generated by exchanging preferential market access and coordinating external tariffs under a CU can offset trade diversion losses. It is important to note that Ornelas (2005) uses the same oligopoly set-up as here but assume that countries are completely symmetric with respect to production technology, but asymmetric with respect to market size. Unlike Ornelas (2005), we examine the dynamic implications of CUs on the multilateral tariff cooperation.

In order to tie our results with those in the existing literature, we first consider a two-stage static game. In the first stage, given the agreement in place, countries choose their optimal tariffs. Then, firms compete in a Cournot fashion. We find that, even when the external tariff of the member countries fall under CU relative to no agreement (tariff complementarity effect as required by Article XXIV of the GATT), the formation of a south-south CU reduces the welfare of the north country. Moreover, when south countries are sufficiently inefficient relative to the north, south-south agreement leads to a large trade diversion effect and thus reduces world welfare. By adding an initial stage to the above game where south countries decide whether to form a CU or not, we can show that south countries always have incentives to form a CU since they benefit from exchanging market access at the outsider's expense.

We then analyze infinite repetition of the above two-stage static game to allow countries to cooperate multilaterally over free trade and show that multilateral cooperation over free trade is less likely to be sustainable when south-south CU is formed relative to no agreement. These results suggest that, when the cost asymmetry across regions is sufficiently high, the concerns over the negative impact of a south-south CU on the world welfare and the prospect of global free trade are legitimate.

Basic Model

We develop a simple oligopoly model of trade in which each country has a unilateral incentive to impose rent extracting tariffs on those trading partners with

whom it does not have any trade agreement. There are three countries: one is a north country (n) and the other two are south countries (s and $\tilde{s}$). Two goods are produced in each country: x and y. Good x is produced by a single profit-maximizing firm in each country at a constant marginal cost in terms of the numeraire good y that is produced under perfect competition with constant returns to scale technology. The gains from trade stem from reduced market power in the domestic industry. To this end, the monopoly assumption is not crucial but is the simplest way to represent market power. Note that, for notational simplicity, whenever we say firm i, it refers to country i's firm. The north and south countries are asymmetric with respect to their marginal costs of production. For simplicity, we assume that $c_s = c_{\tilde{s}} = c > c_n = 0$. The assumption that marginal cost is constant implies that there is no advantage in establishing more than one plant. If marginal costs were rising, firms have the incentive to build several plants to serve the foreign markets. In order to exclude prohibitive cost levels and guarantee market access of south firms, we assume that $c \leq \frac{\alpha}{4}$ holds hereafter. Preferences over the two goods are quasilinear:

$$U_i(x_i, y_i) = u(x_i) + y_i \qquad (1)$$

Furthermore, $u(x_i)$ is assumed to be quadratic so that the demand curve for good x is linear in country i:

$$p_i(x_i) = \alpha - \sum_j x_{ji} \qquad (2)$$

where x_{ji} denotes the output sold by country j's firm in country i, while x_i is the total output sold in country i : $x_i \equiv \sum_j x_{ji}$. Note that α represents the reservation price for a representative consumer above which there is no demand for the non-numeraire good.

Next, we consider a two-stage static game that compares no agreement and a south-south CU with respect to external tariffs and welfare levels.

Static Game

We examine a two-stage game under two distinct trade regimes: no agreement ($\{\Phi\}$) and south-south CU ($\{S\}$). The game proceeds as follows. In the first stage, given the trade agreements, countries simultaneously choose their tariff schedules. Then, firms compete in a Cournot fashion in the product markets. We solve the above game backwards in order to obtain subgame perfect Nash equilibrium (SPNE).

No Agreement ({Φ})

Since Article I of the GATT (the MFN Clause) forbids tariff discrimination, we restrict our attention to symmetric external tariffs by each country. Let t_i^{ϕ} be the tariff imposed by countries where $i = n, s, \tilde{s}$. Firms' effective marginal costs of exporting equal:

$$c_{ij} = c_i + t_j^{\phi}, \text{ for all } i \neq j. \tag{3}$$

Then, export profit functions can be written as:

$$\pi_{ij} = \left[p_j(x_j) - c_{ij}\right]x_{ij}, \text{ for all } i \neq j, \tag{4}$$

where π_{ij} denotes firm i's export profits in country j.

First order conditions (FOCs) for profit maximization for exporters are:

$$p_j + p'_j x_{ij} = c_{ij}, \text{ for all } i \neq j. \tag{5}$$

The above FOCs, together with an analogous condition for the local firm, can be easily solved for equilibrium output levels and profits:[4]

$$\pi_{ij} = x_{ii}^2, \ \pi_{ij} = x_{ij}^2, \text{ for all } i \neq j. \tag{6}$$

Due to the symmetric nature of south firms, we denote a typical south country (firm) by s from hereon. The following comparative static results are standard:

$$\frac{dx_{zi}}{dt_i^{\phi}} < 0 < \frac{dx_{ii}}{dt_i^{\phi}} \text{ ; and } \frac{dx_i}{dt_i^{\phi}} < 0 \text{ where } z \neq i. \tag{7}$$

In other words, a country's tariff lowers imports from other countries to its domestic market, increases the sales of its local firm, and lowers the total output sold in its market.

Welfare of country i is defined as the sum of its domestic surplus and total export profits:

$$w_i \equiv S_i + \sum_{j \neq i} \pi_{ij}, \tag{8}$$

where

$$S_i \equiv u(x_i) - p_i x_i + \pi_{ii} + t_i \sum_{j \neq i} x_{ji}. \quad (9)$$

Since markets are segmented, strategic independence of trade policies is obtained. Thus, country *i*'s tariff choice problem reduces to:

$$max_{t_i} S_i \equiv u(x_i) - p_i x_i + \pi_{ii} + t_i \sum_{j \neq i} x_{ji}. \quad (10)$$

The optimal tariffs are given by

$$t_i^{\phi} = \frac{3\alpha - 2c}{10}. \quad (11)$$

South-South CU ({S})

Due to market segmentation, the north country solves the same problem as in (10) and thus imposes the same optimal tariff as under ({Φ}) : $t_n^S = t_n^{\phi}$. When south countries form a CU with each other, they abolish tariffs on each other and impose a common external tariff (t_s^S) on north firm's export. Therefore, under ({S}), the problem in (10) is modified as follows:

$$max_{t_s^S}(w_s + \pi_{\tilde{s}s}). \quad (12)$$

The following optimal tariff levels solve the above problem:

$$t_s^S = \frac{5\alpha + 2c}{19}. \quad (13)$$

Under complete symmetry ($c = 0$), when south countries form a CU, export of the south member country increases while that of north non-member decreases. As a result, compared to ({Φ}), south members' incentive to impose a tariff on the north non-member decreases since the north non-member country becomes a less important source for rent-extraction. This result is known as the tariff complementarity effect in the literature (see Bagwell & Staiger, 1997, 1998). However, when cost of production is sufficiently asymmetric across regions, the tariff complementarity effect does not necessarily hold:

$$t_s^S - t_s^{\phi} \geq 0 \text{ iff } c \geq \frac{7\alpha}{58}. \quad (14)$$

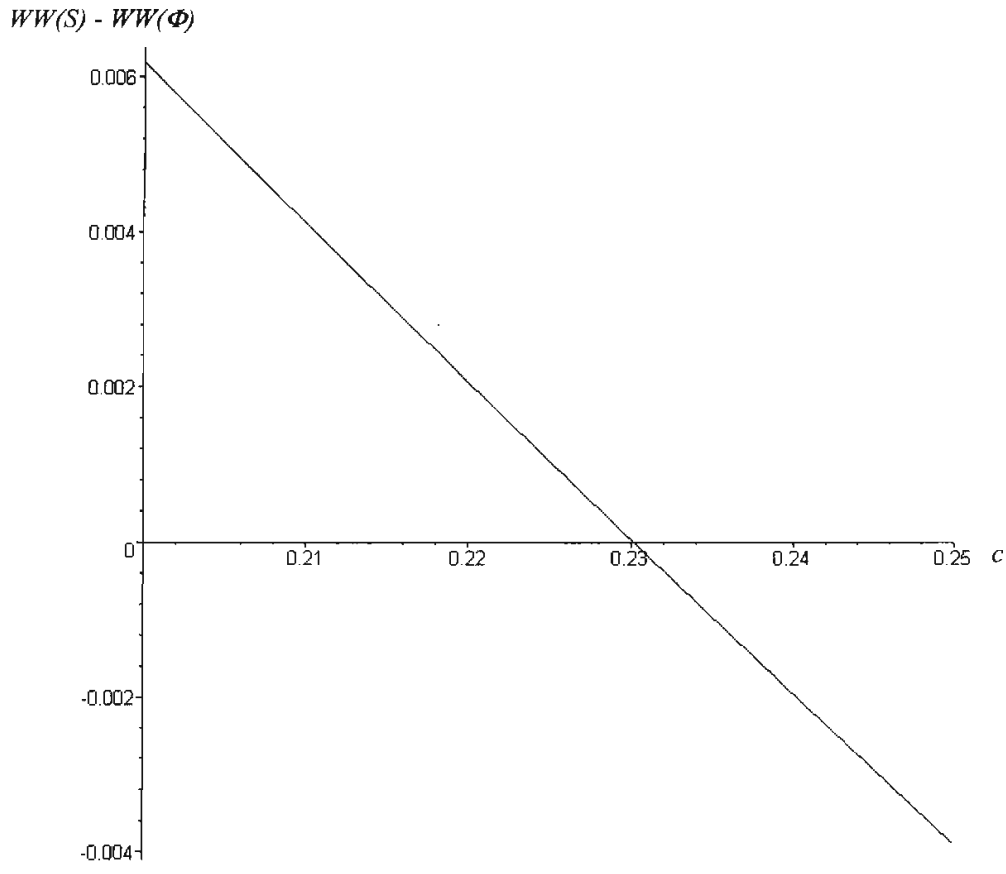
It is important to note that in order to minimize the potential harmful effects of PTAs, Article XXIV requires that member countries should not raise tariffs on non-members relative to tariffs under no agreement.[5] To this end, hereafter we assume that $t_s^S = \frac{3\alpha - 2c}{10}$ when $c > \frac{7\alpha}{58}$ holds. Based on these optimal tariffs, the comparison of welfare yields the following result:[6]

> **Proposition 1**: *Suppose that* $c \leq \frac{\alpha}{4}$ *holds. Then, the following results are obtained: (i) south countries always have an incentive to form a CU with each other:* $w_s(S) > w_s(\Phi)$ *for all c; (ii) south-south CU always reduces the welfare of north countries:* $w_n(S) < w_n(\Phi)$ *for all c, and (iii) world welfare is lower under* $(\{S\})$ *relative to* $(\{\Phi\})$ *if the cost asymmetry is sufficiently large:* $ww(S) \leq ww(\Phi)$ iff $c \geq c^{ww} = \frac{29\alpha}{126}$.

The first part of the above proposition provides a support to the idea that, as north-north trade agreements have intensified, there is no question that south-south trade agreements can also flourish. In other words, south countries always have an incentive to form a CU excluding the efficient north country. The second part of the above proposition argues that the non-member country is worse off under $(\{S\})$ relative to $(\{\Phi\})$ since while its domestic surplus stays unchanged, its firm is discriminated in each of the south country markets against its rival exporter. Finally, when the cost asymmetry across regions is sufficiently high, the concerns over the negative impact of such agreements on the world welfare are legitimate. The intuition behind the last part of the proposition is as follows. Since south member countries have free access in each other's market while the north country's firm faces an external tariff, they substitute efficient imports from the non-member north country with less efficient imports from south partners. As a result, trade diversion effect arises and it increases as the cost asymmetry rises. Thus, as represented in figure 1, world welfare is lower under $(\{S\})$ relative to $(\{\Phi\})$ when south firms are sufficiently inefficient relative to the north firm.

Next, we employ infinite repetition of this one-shot game in order to examine the implications of south-south CU on the prospect and sustainability of global free trade.

Figure 1
World Welfare Comparison ($\alpha = 1$)



Sustainability of Cooperation over Free Trade

In order to determine whether multilateral cooperation over free trade under ({S}) is easier or harder to sustain relative to ({Φ}), we analyze infinite repetition of the above one-shot game. As in Riezman (1991), Bagwell and Staiger (1997a, 1997b, 1998), Bond, Syropoulos, and Winters (2001), and Saggi (2006), such co-operation is required to be self-enforcing: each country balances the current benefit of deviating from the cooperative tariff against the future losses it suffers under the permanent trade war that results from its defection. Similar to Saggi (2006), we assume that CU is permanent by nature so that members retain zero tariffs on each other, even if cooperation with the non-member breaks down.

Tariff Cooperation over Free Trade under ({Φ})

Suppose each country employs a zero tariff until someone defects, in which case cooperation breaks down with countries switching to their MFN tariffs for-ever. In order to proceed, it is useful to discuss the costs and benefits of multilateral

cooperation for all countries. Under free trade, the per period welfare of a country equals:

$$w_i^F(t = 0) \equiv S_i(t_i = 0) + \sum_{z \neq i} \pi_{iz}(t_z = 0). \tag{15}$$

Let $w_i^D(t_i^\phi, t_z = 0)$ denote the welfare of a country that defects from free trade to its optimal tariff, t_i^ϕ:

$$w_i^D(t_i^\phi, t_z = 0) \equiv S_i(t_i^\phi) + \sum_{z \neq i} \pi_{iz}(t_z = 0). \tag{16}$$

It is immediate from the above equations that defection from free trade benefits the defecting country by increasing its domestic surplus through the ability to impose optimal tariffs. One period benefit from defection for south countries equals

$$\begin{aligned} B_s(\Phi) &= w_s^D(t_s^\phi, t_z = 0) - w_s^F(t = 0) \\ &= S_s(t_s^\phi) - S_s(t_s = 0) \\ &= \frac{[3\alpha - 2c]^2}{160} > 0, \text{ where } z \neq s. \end{aligned} \tag{17}$$

Similarly, one period benefit from defection for the north country equals

$$\begin{aligned} B_n(\Phi) &= w_n^D(t_n^\phi, t_z = 0) - w_n^F(t = 0) \\ &= S_n(t_n^\phi) - S_n(t_n = 0) \\ &= \frac{[3\alpha - 2c]^2}{160} > 0, \text{ where } z \neq n. \end{aligned} \tag{18}$$

It is important to note that one period benefit from defection falls as the degree of asymmetry between south and north firms rises:

$$\frac{\partial B_s(\Phi)}{\partial c} = \frac{\partial B_n(\Phi)}{\partial c} < 0$$

Next, we consider the per period cost of defection. When cooperation breaks down, from next period on, countries use their MFN tariffs. The per period cost to a south country of the breakdown of cooperation is given by:

$$\begin{aligned} C_s(\Phi) &= w_s^F(t = 0) - w_s(\Phi) \\ &= -B_s(\Phi) + \left[\sum \pi_{sz}(t_z^\phi = 0) - \sum \pi_{sz}(t_z^\phi)\right] \\ &= \frac{[13\alpha - 62c][3\alpha - 2c]}{800}, \text{ where } z \neq s. \end{aligned} \tag{19}$$

The lower the production cost of its trading partner, the smaller is the increase in export profits enjoyed by a country due to the trade liberalization undertaken by its partners, and the larger is the loss in local profits suffered by the domestic firm due to its own trade liberalization. As a result, cost of defection to a country depends negatively (positively) on its own (rivals') cost:

$$\frac{\partial C_s(\Phi)}{\partial c} < 0 \tag{20}$$

This result suggests that when south firms are sufficiently high cost relative to north firm, cost of defection may even become negative:

$$C_s(\Phi) \leq 0 \text{ iff } c \geq c^{cr} = \frac{13a}{62} \tag{21}$$

Since benefit of defection is always positive for south countries, it is immediate from (21) that, when $c \geq c^{cr}$ holds, cooperation over free trade is never sustainable. That is, there is always an incentive for south countries to defect in this case.

On the other hand, cost of defection is always positive for the north country and gets larger as the cost asymmetry between the two regions increases:

$$\begin{aligned} C_n(\Phi) &= w_n^F(t=0) - w_n(\Phi) \\ &= -B_n(\Phi) + \left[\sum \pi_{nz}(t_z = 0) - \sum \pi_{nz}(t_z = t_z^{\phi})\right] \\ &= \frac{[13\alpha + 98c][3\alpha - 2c]}{800}, \text{ where } z \neq n. \end{aligned} \tag{22}$$

and

$$\frac{\partial C_n(\Phi)}{\partial c} > 0 \tag{23}$$

More importantly, the per period cost of the breakdown of cooperation to a south country is lower than that to a north country:

$$C_s(\Phi) \leq C_n(\Phi). \tag{24}$$

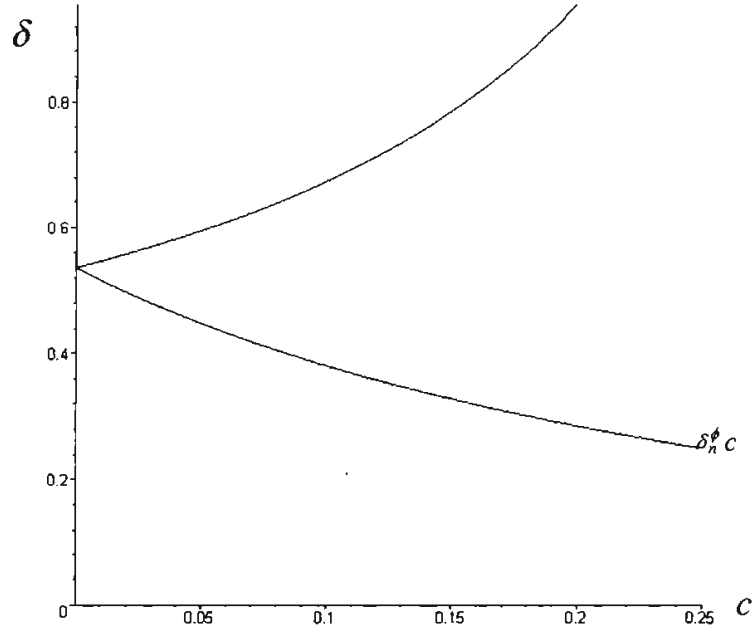
For cooperation to be sustainable, the current benefit of defection must be less than the discounted life-time cost of defection for each country. In other words, the incentive compatibility (IC) constraint must hold for each country as follows:

$$B_i(\Phi) \leq \frac{\delta}{1-\delta} C_i(\Phi) \text{ for all } i \qquad (25)$$

where ∂ denotes the discount factor and $\frac{\delta}{1-\delta} c_i(\Phi)$ measures the trade war's cost to each country under ($\{\Phi\}$). For each country, the critical discount factor, δ_i^{ϕ}, above which cooperation over free trade is self-enforcing is obtained when $B_i(\Phi) = C_i(\Phi)$ holds. From the expressions (17), (18), and (24), the following is immediate (see figure 2):

Proposition 2: *Under ($\{\Phi\}$), the range of discount factors above which north country is willing to cooperate over free trade is larger than that above which south countries are willing to cooperate. It implies that: $\delta_s^{\phi} \geq \delta_n^{\phi}$. Thus, multilateral cooperation over free trade is sustainable if and only if $\delta \geq \delta_s^{\phi}$.*

Figure 2
Critical Discount factors Under No Agreement ($\alpha = 1$)



The above proposition suggests that since the benefit of defection is the same while the cost of defection is smaller for south countries relative to the north country, the critical discount factor above which south countries are willing to cooperate over free trade binds for the sustainability of multilateral cooperation over free trade.

Tariff Cooperation over Free Trade under ({S})

Now, we consider how the formation of a south-south CU alters incentives for multilateral tariff cooperation. To this end, we discuss how the costs and benefits of multilateral cooperation for all countries change. It is straightforward to argue that when countries cooperate over free trade, the per period welfare of the north country stays the same under ({S}) as in (15) under ({Φ}). Therefore, the benefit of defection from cooperation for the north country remains the same under ({Φ}) and ({S}).

Next, consider the cost of the defection of the north country. When cooperation breaks down, from the next period on, the north country responds by raising its tariff on imports from south countries from zero to t_n^{ϕ} as under ({Φ}). In contrast, north country faces t_s^S(instead of t_s^{ϕ}) in the south countries that abolish tariffs between each other. It follows immediately from the second part of the proposition 1 that:

> **Lemma 1**: *The per period cost to a north country of the breakdown of cooperation is higher under ({S}) than under ({Φ}), while the benefit of defection stays the same under these two regimes.*

The above lemma implies that a south-south CU makes north countries more willing to cooperate multilaterally over free trade. Next, we consider the incentives of south countries for multilateral tariff cooperation. Note that, by the nature of the institution, defection from cooperation by a CU involves defection by both members. In the following discussion, the welfare per CU member is considered.

Let $w_s^D(t_s^S, t_z^S = 0)$ denote the welfare of a south country that defects from zero tariff to its optimal tariff t_s^S under ({S}):

$$w_s^D(t_s^S, t_z^S = 0) \equiv S_s(t_s^S) + \pi_{ss}(t_s^S) + \pi_{sn}(t_n^S = 0). \tag{26}$$

Thus, one period benefit from defection for south countries under ({S}) equals

$$\begin{aligned} Bs(S) &= w_s^D(t_s^S, t_z^S = 0) - w_s^F(t = 0) \qquad (27)\\ &= [S_s(t_s^S) - S_s(t_s^S = 0)] + [\pi_{ss}(t_s^S) - \pi_{ss}(t_s^S = 0)] \\ &= \frac{[5\alpha + 2c]^2}{608} > 0, \text{ if } c < \frac{7\alpha}{58} \\ &= \frac{[3\alpha - 2c][43\alpha + 78]^2}{3200} > 0, \text{ if } c \geq \frac{7\alpha}{58}. \end{aligned}$$

On the other hand, one period cost of defection to south countries under ({S}) is given by:

$$C_s(S) = w_s^F(t = 0) - w_s(S) \qquad (28)$$
$$= -B_s(S) + \left[\sum \pi_{sn}(t_n^S = 0) - \sum \pi_{sn}(t_n^S)\right].$$

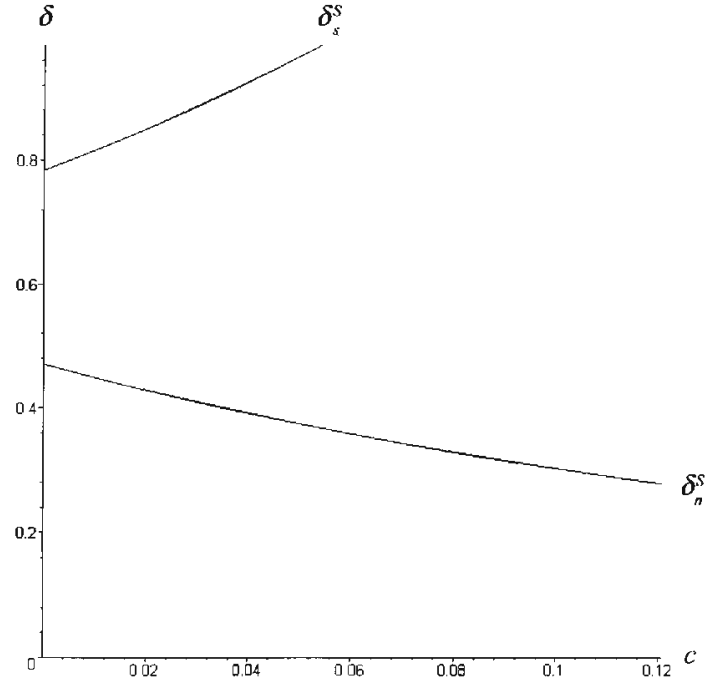
The first part of proposition 1 implies that the cost of defection is unambiguously lower under ({S}) relative to ({Φ}) and gets negative when south firms are sufficiently high cost (multilateral cooperation is never sustainable). Similar to the analysis under ({Φ}), the incentive compatibility (IC) constraint must hold for each country for multilateral cooperation to be sustainable:

$$B_i(S) \leq \frac{\delta}{1-\delta} C_i(S) \text{ for all } i. \qquad (29)$$

Let δ_i^S denote the critical discount factor above which cooperation is self-enforcing for country i under ({S}).The following result is depicted in figure 3:

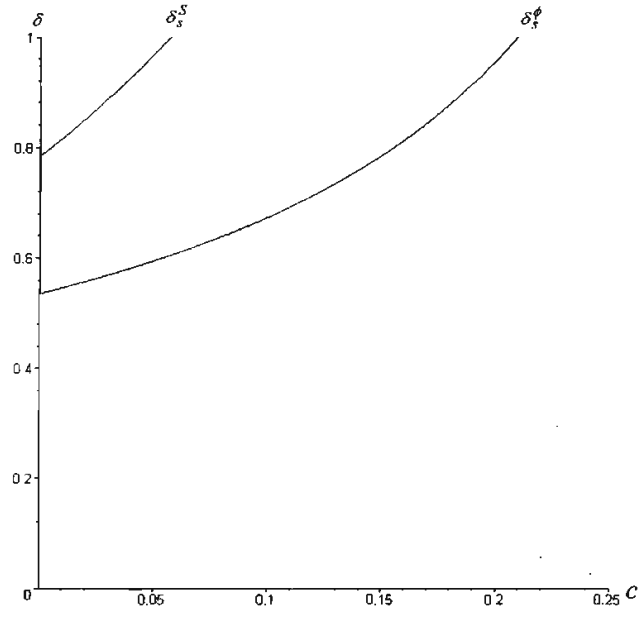
Proposition 3: *Under ({S}), the range of discount factors above which north country is willing to cooperate over free trade is larger than that above which south countries are willing to cooperate. It implies that:* $\delta_s^S \geq \delta_n^S$. *Thus, multilateral cooperation over free trade is sustainable if and only if:* $\delta \geq \delta_s^S$.

Figure 3
Critical Discount Factors under South-South CU (a = 1)



The above proposition has a similar implication as Proposition 2 in the sense that south countries' choices are binding for the sustainability of multilateral cooperation. Next, we ask whether south-south CU makes multilateral cooperation over free trade easier to sustain or not. To this end, figure 4 compares δ_s^{ϕ} and δ_s^{S}.

Figure 4
Sustainability of Multilateral Cooperation ($\alpha = 1$)



Proposition 4: *Multilateral cooperation over free trade is harder to sustain under* ({S}) *relative to* ({Φ}): $\delta_s^S > \delta_s^{\phi}$.

The major implication of proposition 1 and proposition 4 is that when south firms are sufficiently high cost relative to north firms, the formation of a south-south CU not only reduces world welfare statically via trade diversion but also makes multilateral cooperation over free trade harder to sustain. These two results suggest that the concerns regarding the impact of south-south agreements on world welfare and the prospect of global free trade are legitimate.

Conclusion

Over the last few decades, the proliferation of PTAs has been the visible trend in the international trading system. According to the WTO, on an average, each country belongs to six PTAs and Mongolia is the only country that does not belong to a PTA. Jagdish Bhagwati (1991) famously raised concern about the potential adverse effects of the pursuit of PTAs on the pattern of tariffs, welfare, and the prospect

of multilateral trade liberalization. His work led to a rich body of research that has examined the implications of preferential trade liberalization along several fronts. Since Jacob Viner's (1950) classic analysis, the static and dynamic distortions created by preferential trade liberalization have received substantial attention from economists and policy-makers alike. The net welfare effect of a PTA depends upon the relative dominance of the trade creation effects and the trade diversion effects of the PTAs. Since south member countries would substitute efficient imports from non-member north countries with less efficient imports from south partners, there have been widespread concerns over the welfare implications of south-south PTAs.

This paper addresses two interrelated questions: What are the static implications of a south-south PTA on the pattern of tariffs and the welfare of the PTA member countries and the world when PTA is in the form of a customs union? Do these agreements facilitate multilateral cooperation over free trade dynamically? These questions are important since the number of PTAs among developing countries has increased dramatically over the last two decades. We show that south countries always have incentives to form a CU among themselves, under which the north country is always worse off relative to no agreement. More importantly, when the degree of cost asymmetry between developed and developing countries is sufficiently high, the concerns regarding the adverse impact of such agreements on the world welfare are legitimate. We further show that the multilateral cooperation over free trade is less likely to be sustainable under a south-south customs union relative to no agreement.

Notes

1. The MFN clause states that: "Under the WTO agreements, countries cannot normally discriminate between their trading partners. Grant someone a special favour (such as a lower customs duty rate for one of their products) and you have to do the same for all other WTO members. This sounds like a contradiction. It suggests special treatment, but in the WTO it actually means non-discrimination — treating virtually everyone equally . . . . Each member treats all the other members equally as "most-favoured" trading partners. If a country improves the benefits that it gives to one trading partner, it has to give the same "best" treatment to all the other WTO members so that they all remain "most-favoured""(WTO webpage: http://www.wto.org/english/thewto_e/whatis_e/tif_e/fact2_e.htm#seebox)

2. To minimize the potential harmful effects of PTAs, Article XXIV requires that: (i) a PTA must cover almost all trade between its members; (ii) PTA members must

fully eliminate tariffs and other trade restrictions on each other; and (iii) they should not raise tariffs (or any other trade restrictions) on non-members.

3. In a similar set-up, Das and Ghosh (2006) employ an endogenous coalition formation model to provide a rationale for why trading blocs among similar countries may arise as an equilibrium phenomenon.

4. Note that, in order to guarantee positive output levels for the south firms in the north countryís market, we assume that $c \leq \frac{\alpha}{4}$ holds.

5. See Hoekman and Kosetcki (2001) for an extended discussion of Article XXIV.

6. For detailed proof of the propositions, the readers may contact the corresponding author.

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Economic Growth Creation or Diversion? The Record of Trade Agreements in Latin America

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Abstract

This paper examines the effects of Preferential Trade Agreements (PTAs) and GATT/WTO membership on economic growth using a sample of seventeen Latin American countries for the period 1950-2004. In general, the evidence indicates that the proliferation of bilateral and multicountry regional and extra regional trade agreements has not resulted in faster economic growth. On the contrary, we find that PTAs and WTO only have a weak positive effect on increasing trade openness; but this relationship does not translate into faster economic growth when controlling for capital, labor force and trade openness. These results are robust to both static and dynamic model specifications, indicating that trade openness has a positive effect on per capita output growth, but PTA and WTO membership do not. Integration via *de facto* increases output growth while integration via *de jure* does not. Based on the results, PTAs create a net diversion effect on economic growth.

Introduction

Economists are known for disagreeing in many things. However, when it comes to trade, there is an overwhelming consensus that free trade is good. More so, they convey that — in most circumstances — freer trade is preferred over restricted trade, and more trade is preferred to less. The underlying assumption is that trade is an engine for economic growth. In this regard, economic reform moves countries from protectionism to freer trade regimes. The recent reform process has been characterized by a predominant proliferation of preferential trade agreements (PTAs) (both regional and extra regional), over multilateral negotiations along the lines of the GATT/WTO. A part of the proliferation of PTAs over multilateral liberalization is the result of a failure to achieve consensus as exemplified in the Doha-Round trade negotiations. However, with regard to PTAs, the contentious issue is whether integration through agreements — *de jure* — generates greater gains in relation to integration through market — *de facto*. In other words, do PTAs substitute or complement multilateral trade integration and do PTAs generate positive or pervasive

effects on economic growth? Thus, there exists much controversy on the effects of PTAs on trade (diversion versus creation) and consequent effects on economic growth. Latin America is one particular economic region of interest, because of its fast adoption of PTAs.

Latin America and the Caribbean is an economic region composed of about 34 countries with an estimated combined market size of 400 million people. According to Cardoso and Helwege (1995), the proliferation of preferential trade agreements in Latin America, under the inward looking import substitution industrialization period, partially explains the underdevelopment observed in this region. It is during this period that regional preferential trade agreements, such as the Central American Common Market (CACM) and the ANDEAN pact, were implemented.[2] The growth paradox of these agreements is that while promoting more trade within the members, they were discriminatory to non-members, with the consequent degeneration into a net trade diversion effect. However, in an effort to restore the region's international competitiveness and promote dynamic industrial and service sectors, most Latin American countries have decisively implemented market-friendly reforms since the early 1980s. The new mantra emphasizes the promotion of freer trade as the engine of economic growth. As a result of the new economic and political regimes, there has been a surge and proliferation of intra and extra regional trade agreements, making the region a showcase for trade liberalization (Kuwayama, Duran, & Silva, 2005).

The proliferation of PTAs over multilateral agreements has been in part the result of specific applications of Article XXIV of the GATT that allows for the formation of PTAs, provided that those agreements cover substantial trade, free trade is the ultimate goal among members, and do not increase protection to the rest of the world (Krueger, 1999). Thus, as a result of this clause and the failure to move forward general agreements such as the Doha Round, there are currently about 200 PTAs around the world. This number is projected to increase to about 400 in the next decade. Saggi and Yildiz (2008) indicate that countries are, freely and willingly, engaged in PTAs over the alternative of multilateral liberalization. Latin America is no exception as Jurn and Park (2002) and Kuwayama et al. (2005) argue. However, a clear and relevant difference between multilateral liberalization and PTAs is that the former gives symmetric treatment to all countries while the latter takes many forms ranging from intra-regional bilateral to extra-regional multicountry, resulting in asymmetric preferences given to members over non-members. Gouvea & Hranaiova (2002) indicate that while these trade reforms are setting the ground for further integration toward the creation of the Free Trade Agreement of the Americas, much controversy remains as to whether this is the case. Therefore, understanding

the impact that international trade reform, and, specifically, the role that freer international trade has on output growth in both short-run and long-run is of relevance to all parties involved. In this context, given the proliferation of Preferential Trade Agreements (PTA) as one of the main mechanisms to advance the trade reform process, the following questions become relevant: i) can PTAs be equated with freer trade movements, *stepping stones*, or do they turn into *stumbling blocks*, moving economies away from multilateral free trade and further economic integration?, and, ii) are PTAs trade creating or trade diverting in nature, and thus, do they promote or retard economic growth? This paper pays particular attention to the latter question, while acknowledging the relevance of the former.

The paper uses conventional well known economic theory and econometric analysis (static and dynamic estimations) to address the posted question, looking at the Latin America case. The originality of this paper rests on the relevance of its findings, as it provides a direct account of the effect and direction of PTAs on the rate of growth of output, addressing the overarching question of whether PTAs are economic-growth creating or economic-growth diverting. The paper is organized as follows. The next section provides a comprehensive review of the literature on trade openness and the role of PTAs. Section III outlines the model specification under the static and dynamic conditions. Section IV describes the data, presents the main findings and their corresponding analysis. Section V concludes and provides policy recommendations and overall implications.

On the goodness of free trade and freer trade reform. The role of PTAs.

From a theoretical point of view most economists agree that trade is good with open economies growing faster than otherwise.[3] For instance, a large body of literature addresses the positive effects that export (trade) growth has in per capita output growth.[4] Barboza (2007) provides an extensive review of the literature and notes that not only one should look at the favorable role of export on economic growth, but most importantly to the fact that if trade increases economic growth, other transmission mechanisms should be considered, such as the role of trade on: transfer of technology, generation of economies of scale, learning-by-doing and development of the R&D (see Edwards, 1992; Romer, 1986, 1990, 1994; Grossman & Helpman, 1990, 1994; Keller, 2002; Dowrick & Golley, 2004; among others).

With the objective of obtaining the benefits of expanded trade as indicated above, developing countries have resorted to the implementation of PTAs of various sorts in the wake of failed multilateral negotiations. Kuwayama et al. (2005) are

prompt to indicate that Latin America is a showcase of PTAs in this regard. However, Viner's (1950) pioneering work on the welfare effects of custom unions warns of the possible negative effects of these agreements on both members and world welfare. In addition, as Bhagwati (1991) indicates, the drawback of PTAs is that they have the potential to create a trade-diversion effect over multilateral trade negotiations. In the words of Bhagwati (1991), PTAs have the potential to be either "stepping stones or stumbling blocks" to a more integrated and highly efficient trading system. Therefore, countries pursuing economic integration through PTAs may see an increase in trade flows for participating members, with a negative consequence on overall economic growth, as trade diversion substitutes cheaper imports from non-member parties. Krueger (1999) points out that short term gains derived from PTAs may compromise long term economic perspectives, if PTAs move countries away from multilateralism. That is, PTAs could divert trade from nonmember nations to members, given that the agreement takes away competitiveness from countries that do not belong to the agreement. Consequently, the potential trade diversion effect, while increasing overall trade, may reduce economic wellbeing. An interesting consideration is brought forth by Saggi and Yildiz (2008). They indicate that countries engage in PTAs endogenously over the unilateral and multilateral trade liberalization. Soloaga and Winters (1999) indicate that "the effect of PTAs on trade is still an open question" (p2). In general, Foroutan (1998) acknowledges that "belonging to a regional scheme constitutes neither a necessary nor a sufficient condition for an open and liberal trade regime (p.11).

Krueger (1999) also recognizes the fact that the effect of PTAs on participants' wellbeing could result in asymmetric outcomes from a common trade agreement, depending on each country's own situation. Relatively speaking, though, countries that are not part of the preferential agreement would lose trade, *ceteris paribus*. Furthermore, Krueger states that gains from trade agreements in terms of welfare are lower when countries with similar factor endowments trade, relative to when countries have different endowments. For instance, Jurn and Park (2002), studying Mercosur, note the existing controversy about how the regional agreement is advancing the cause of multilateral liberalization. Whether this is the case may be assessed by examining the net trade-creating or trade-diverting effects of the agreements (Jurn & Park, 2002). Yeats (1997) finds significant evidence of trade diversion effects in the case of MERCOSUR, and indicates that the data analysis finds similar results at the aggregate macro level for the four founding members: Brazil, Argentina, Uruguay, and Paraguay.

In the more general case of the entire Latin America region, Aminian et al. (2008), indicate that Latin America has primarily used formal regional trade trea-

ties as the main channel of integration. However, Latin America is less integrated than is East Asia, although the latter region has relatively less formal regional trade treaties.[5] Duran, Mulder, and Onodera (2008) find out that although Latin America implemented tariff liberalization at an earlier stage than East Asia, reductions in non-trade barriers were faster in East Asia than in Latin America. Also, Duran et al. (2008) discuss how the macroeconomic environment of overvalued exchange rates, high inflation and high interest rates combined with low and volatile growth may have reduced the effects of trade reform.

Finally, from an empirical point of view, the openness-output relationship has been studied traditionally using static model specifications. Empirical results derived from static model specifications point out to the existence of a positive relationship between export (trade) growth and output growth, yet they are not conclusive. Significant controversy remains as a key element when proposing trade reforms. With these considerations in mind we now turn to the model specification.

Model

To determine the effects of PTAs on output growth, let us start our analysis by outlining a static model specification similar to the one previous studies have used (Feder, 1982; De Gregorio, 1992; Mbaku, 1989; Kavoussi, 1984; Ram, 1985; Moschos, 1989; Knight, Loayza, & Villanueva, 1993; Tyler, 1981; and Moran, 1983). We specify a simple production function that identifies the basic factors (labor and capital) that contribute to economic growth, augmented to include trade openness as an additional factor of production as presented in Strauss and Ferris (1996), among others. We assume that openness enables the exploitation of economies of scale, transfers technology, promotes reallocation of resources according to comparative advantage, and allows greater capacity utilization, and increased employment in labor surplus countries (Grossman & Helpman, 1990, 1991, 1994; Aghion & Howitt, 1998; Harrison, 1996; Edwards, 1992, 1993; Ben-David & Loewy, 1998). Thus, the basic model is represented by the production function:

$$Q_{it} = f(K_{it}, L_{it}, X_{it}) \qquad (1)$$

where Q_{it} is the real Gross Domestic Product, K_{it} is the capital stock, L_{it} is the labor force and X_{it} is the degree of trade openness for country i in period t. Total differentiation with respect to time and dividing through by equation 1, yields:[6]

$$y_{i,t} = \alpha + \beta k_{i,t} + \delta l_{i,t} + \psi x_{i,t} \quad (2)$$

where $y_{i,t}$ is the rate of growth of output, $k_{i,t}$ is the rate of growth of capital stock, $l_{i,t}$ is the rate of growth of the labor force, and $x_{i,t}$ is the rate of growth of openness, where it is assumed that the rate of technological change is a linear function of the openness growth rate as expressed by ψ. β, δ, and ψ are the elasticities of output with respect to capital, labor, and trade openness respectively, and α is the growth rate of unexplained total factor productivity. By approximating the rate of growth of the capital stock by the investment-output ratio (Ram, 1985; Feder, 1982; and Mbaku, 1989; among others) times the rate of growth of the capital stock, and replacing the change in the capital stock with the investment rate, I, we obtain,

$$y_{i,t} = \alpha_0 + \lambda \frac{I_{i,t}}{Q_{i,t}} + \delta l_{i,t} + \psi x_{i,t} \quad (3)$$

Now λ is the marginal physical output of capital. Expected parameter signs are: $\lambda > 0$ (more capital per worker increases labor productivity), $\delta < 0$ (more workers per unit of capital reduce labor productivity), and $\psi > 0$ (more openness increases labor productivity). Additionally, to expand and simultaneously control for the effects of the formation of PTAs (Bilateral and Multicountry, both regional and extra regional) and WTO (Multilateral) membership, we include a set of categorical variables as indicated in equation 4 below. If PTAs are growth-creating, then the corresponding coefficients will have a positive sign and if they are growth diverting, the coefficients will have a negative sign. Finally, we add a time dummy variable for each decade — between 1950-2004 — to account for possible time effects (see Aminian et al., 2008). The resulting equation is,

$$y_{i,t} = \alpha_0 + \lambda \frac{I_{i,t}}{Q_{i,t}} + \delta l_{i,t} + \psi x_{i,t} + \sum_{j=1}^{4} \varphi_j PTA_{ji,t} + \omega WTO_{i,t} + \sum_{j=1}^{6} \rho_j T_j + e_t \quad (4)$$

where φ_j corresponds to each PTA type, j, with the null hypothesis that it is positive if PTAs are growth creating, and negative if they are growth diverting. ω corresponds to the effect that being a member of the WTO has on output growth and we test the null hypothesis that multilateral trade agreements are growth creating, thus $\omega > 0$. Finally, ρ_j could be positive or negative depending on the time-specific effects.

Dynamic Growth Effects

The main limitation of static models, such as the one outlined in (**4**) above, is that they do not permit for a full decomposition of results between short-run and long-run. This decomposition is a primary interest of this paper, since we desire to determine the effects of PTAs on output growth and their effect on factors of production as they relate to output growth. Alternatively, a dynamic model specification is more appropriate to capture spillover effects deriving from investment, policy reform, and freer trade (Francois, Nordström, & Shiells, 1996; and Strauss & Ferris, 1996). With such a specification, we expect to capture the dynamic effects of trade reform in the degree of trade openness while simultaneously controlling for the time and type of PTA formation. Furthermore, a dynamic specification also allows determining the speed of adjustment toward the long-run equilibrium relationship between dependent and independent variables.

Thus, a dynamic specification of the model is outlined along the lines of Strauss and Ferris (1996) — based on Phillips and Loretan (1991) — with the corresponding modifications to account for the categorical variables relating to PTA, WTO, and time. Equation (**5**) provides the basic dynamic specification:

$$Y_{i,t} = \alpha_0 + \alpha_1 X_{i,t} + \alpha_2 X_{i,t-1} + \alpha_3 Y_{i,t-1} + \sum_{j=1}^{4} \varphi_j PTA_{ji,t} + \omega WTO_{i,t} + \sum_{j=1}^{6} \rho_j T_j + e_{i,t} \quad (5)$$

where $X_{i,t}$ is a vector of explanatory variables, and output in time t is now a function of the lagged explanatory variables X_{t-1} and lagged output Y_{t-1}. Following Hendry, Pagan, and Sargan (1984), we subtract Y_{t-1} from both sides and rearrange in terms of X_{t-1} to construct an Error Correction Model (ECM):[7]

$$DY_{i,t} = \beta_0 + \beta_1 DX_{i,t} + \beta_2 (Y_{i,t-1} - \beta_3 X_{i,t-1}) + \sum_{j=1}^{4} \varphi_j PTA_{ji,t} + \omega WTO_{i,t} + \sum_{j=1}^{6} \rho_j T_j + e_{i,t} \quad (6)$$

D represents the difference function, β_1 corresponds to the short-run parameter, $\beta_3 = 1$, and β_2 is defined as the disequilibrium adjustment speed (Hendry et al. 1984). The coefficient β_2 is known as the ECM parameter, or the dynamic component of the productivity and growth model. Wickens and Breusch (1988) argue that in terms of the empirical estimation of the ECM, it is easier to express the model without

imposing any restriction on the parameters, i.e. $\beta_3 = 1$. Expressing equation (**6**) in terms of $Y_{i,t}$, results in:

$$Y_{i,t} = \phi_1 DY_{i,t-1} + \theta_i X_{i,t} - \gamma_i DX_{i,t} + \sum_{j=1}^{4} \varphi_j PTA_{ji,t} + \omega WTO_{i,t} + \sum_{j=1}^{6} \rho_j T_j + \mu_{i,t}. \quad (7)$$

In this reformulation, ϕ_1 corresponds to the convergence parameter, i.e., how long it takes to correct the disequilibrium situation; θ_i represents the long-run parameters; and γ_i represents the short-run estimates. Under (**7**), the expected parameter sign is $\phi_1 > 0$. θ_i and γ_i follow the same parameter distribution as the corresponding static estimations with labor force having a negative effect on per capita output growth (along steady state situations), capital accumulation affecting positively output growth and trade openness positively influencing output growth. It is expected that long-run coefficients have higher values than corresponding short-run coefficients in absolute terms, if trade openness promotes technological change and development. The effects of PTAs should be reflected as positive coefficients, and once accounted for, the overall effects of trade openness should increase as well; provided that PTAs are both trade creating and consequently growth creating. In this framework of analysis, controlling for the existence of PTAs allows to further decompose the relative contribution of each explanatory variable in both the short and the long runs. Let us assume the case where PTAs promote growth through larger trade openness, then one should expect positive and significant coefficients both from the categorical (PTA) variables and trade openness. On the contrary, if PTA agreements produce diverging effects, then the question becomes whether PTA yields negative and significant coefficients, and how the openness coefficients react to that. We place particular interest in determining the existence of economic differences in magnitude and sign across PTAs coefficients; whether they are bilateral and regional, bilateral and extra regional, multicountry regional (MERCOSUR, CACM, ANDEAN), or multicountry extra regional (MERCOSUR-EFTA), for instance. With these considerations in mind, we proceed to describe the data, estimations, and provide interpretation of the results.

Data and Empirical Analysis

We obtain the data for this paper from several sources covering 17 Latin American countries (See Tables A1 and A2 in the Appendix for a list of countries

included in the sample, and Table A3 for corresponding descriptive statistics), for the period 1950-2004. Economic data are from the Penn World Tables 6.2 and include the real GDP per worker PPP Chain (Dependent Variable), population, real capital to output ratio, and real trade openness. While there are several alternative measures of openness, Trade Openness is measured as the ratio of exports plus imports to gross domestic product in constant prices, as it has been done in previous literature. This variable directly measures the amount of trade taking place and its relative importance to each economy's total output; it also makes comparisons across studies more convenient. To adjust the data to the model specification, all economic variables are expressed in natural logarithms, and first-differenced in order to obtain rates of growth. Data for PTAs come from Duran et al. (2007) and Aminian et al. (2008) (see Table A1); whereas data for WTO accession dates are from Rose (2004).

As indicated earlier, we perform two sets of estimations: one static and one dynamic. For each specification, we estimate a basic productivity model without controlling for PTA (Bilateral-Multicountry and Regional-Extra regional), WTO membership, or decade specific effects. We then expand the model to include the categorical variables. The results of our estimations are reported in Tables 1 and 2 respectively. In this regard, WTO is a dummy variable that takes the value of one at the time of accession to the WTO onwards. PTA is a categorical variable represented in four possible categories, as discussed earlier.

A first look at the descriptive statistics in Table A3 in the appendix reveals some interesting facts. First, we observe that the degree of trade openness is normally distributed across the sample with a Kurtosis of 3.154 and Skewness of 0.07. Real Gross Domestic Product per worker is marginally leptokurtic and skewed to the left, indicating a high concentration of countries with relatively low income. The Capital-to-output ratio is platykurtic and also skewed to the left. Secondly, information regarding PTAs indicates overwhelming preference across Latin American countries for bilateral-intraregional agreements as the main mechanism to promote trade reform. This type of agreement has become the preferred choice in conjunction with the overall economic reform and liberalization process along the market-driven reforms (see Aminian et al., 2008; Kuwayama et al., 2005; and Krueger, 1999). For instance, there is a maximum of eleven agreements for one country while the average per country is 0.305 agreements. This clearly illustrates the fact that PTAs are concentrated in a few countries that have been more aggressive in their liberalization process, namely Chile and Mexico. On the other hand, Latin American countries have only recently and, therefore, marginally engaged in the implementation of bilateral extra regional agreements, with a maximum of two and an average of only

Table 1

Pooled LS Economic Growth Estimates with Real GDP per worker PPP chain growth as Dependent Variable for 1951-2003

	Models									
	1	2	3	4	5	6	7	8	9	10
Capital	0.049	0.046	0.045	0.046	0.046	0.044	0.045	0.044	0.044	0.044
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Population	0.447	0.439	0.524	0.440	0.437	0.736	0.451	0.755	-0.069	0.132
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.788)	(0.611)
Trade Openness		0.025	0.029	0.025	0.024	0.031	0.027	0.028	0.025	0.023
		(0.203)	(0.130)	(0.200)	(0.210)	(0.097)	(0.167)	(0.127)	(0.153)	(0.176)
WTO			-0.005							-0.002
			(0.093)							(0.589)
Number of Bilateral PTA				0.000				0.006		0.005
				(0.910)				(0.004)		(0.003)
Extraregional Bilateral PTAs					0.007			-0.010		-0.009
					(0.624)			(0.561)		(0.606)
Number of Multicountry PTA						-0.015		-0.017		-0.011
						(0.000)		(0.000)		(0.003)
Extraregional Multicountry PTA							-0.012	-0.012		-0.012
							(0.063)	(0.069)		(0.060)
Dummy 1950-59									0.023	0.018
									(0.007)	(0.038)

Table 1 *(contd.)*

Pooled LS Economic Growth Estimates with Real GDP per worker PPP chain growth as Dependent Variable for 1951-2003

	Models									
	1	2	3	4	5	6	7	8	9	10
Dummy 1960-69									0.027	0.025
									(0.001)	(0.004)
Dummy 1970-79									0.023	0.025
									(0.004)	(0.003)
Dummy 1980-89									-0.012	-0.009
									(0.092)	(0.238)
Dummy 1990-99									0.004	0.008
									(0.544)	(0.384)
Dummy 2000-03									-0.007	0.001
									(0.364)	(0.938)
N° of obs	898	898	898	898	898	898	898	898	898	898
R^2	0.080	0.083	0.087	0.083	0.083	0.120	0.088	0.130	0.181	0.198

No constant reported

Values in parenthesis are p-values

Table 2

ECM with GDP per worker Chain PPP growth as Dependent Variable from 1952-2003

	Models							
	1	2	3	4	5	6	7	8
Long-run Estimates								
Population	0.439	0.532	0.440	0.438	0.745	0.453	0.797	0.218
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.305)
Capital	0.063	0.060	0.063	0.063	0.058	0.061	0.057	0.056
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Trade Openness	0.028	0.038	0.028	0.028	0.042	0.031	0.037	0.028
	(0.252)	(0.107)	(0.247)	(0.259)	(0.057)	(0.198)	(0.096)	(0.150)
Short-run Estimates								
Population	0.697	0.559	0.693	0.702	0.235	0.644	0.254	0.521
	(0.170)	(0.267)	(0.171)	(0.167)	(0.635)	(0.203)	(0.605)	(0.280)
Capital	-0.036	-0.034	-0.036	-0.036	-0.033	-0.035	-0.033	-0.031
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Trade Openness	-0.028	-0.033	-0.028	-0.028	-0.035	-0.028	-0.031	-0.027
	(0.090)	(0.039)	(0.088)	(0.092)	(0.020)	(0.079)	(0.041)	(0.048)
ECM-Dynamic	0.485	0.485	0.485	0.485	0.487	0.487	0.490	0.487
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
WTO		-0.006					-0.003	-0.002
		(0.026)					(0.222)	(0.505)
Number of Bilateral PTA			0.000				0.007	0.007
			(0.922)				(0.000)	(0.000)
Extraregional Bilateral PTA				0.006			-0.015	-0.015
				(0.619)			(0.231)	(0.243)

Table 2 *(contd.)*

ECM with GDP per worker Chain PPP growth as Dependent Variable from 1952-2003

	Models							
	1	2	3	4	5	6	7	8
Number of Multicountry PTA					-0.015 (0.000)		-0.017 (0.000)	-0.011 (0.000)
Extraregional Muticountry PTA						-0.013 (0.006)	-0.015 (0.002)	-0.015 (0.001)
Dummy 1950-59								0.016 (0.027)
Dummy 1960-69								0.022 (0.002)
Dummy 1970-79								0.023 (0.001)
Dummy 1980-89								-0.008 (0.198)
Dummy 1990-99								0.005 (0.534)
Dummy 2000-03								0.000 (0.985)
Estimated speed of adjustment (in years)	2.061	2.061	2.061	2.061	2.053	2.053	2.041	2.053
N° of obs	881	881	881	881	881	881	881	881
R?	0.432	0.437	0.432	0.432	0.471	0.438	0.485	0.541

No constant reported

Values in parenthesis are p-values

0.01 trade agreements per country. Thirdly, multicountry agreements are less common for a variety of reasons such as a required higher number of countries involved, higher administrative cost and greater complexity of coordination (diseconomies of scale). In this regard, we observe an average of 0.53 intraregional agreements over 0.046 extraregional agreements per country. It is relevant to point out that the largest intraregional multicountry agreements were signed both in the context of the ISI process during the 1960s and with geographical proximity consideration in mind included countries that share common borders, like in the case of CACM and ANDEAN. MERCOSUR shares these same characteristics but was signed in 1991. Finally, extraregional multicountry agreements have appeared most recently during the 1990s and 2000s, as a response to halted multilateral negotiations, such as the Doha Round, as mentioned earlier. This newest wave of PTAs is slightly different from the previous ones as they now incorporate countries that do not necessarily have common borders.

Findings

The results from the static and dynamic estimations are presented in Tables 1 and 2, respectively. We make the following observations from the static model estimation results. First, the evidence confirms the null hypothesis that trade enhances growth. However, while the relationship is positive, it is statistically significant only after controlling for some categorical elements. For example, when controlling for membership to the WTO, trade openness is positive but not statistically significant. Furthermore the WTO coefficient is both negative and significant at the 10% in estimation 3 but not in estimation 10 (See Table 1). This result concurs with those reported by Rose (2004, p.98). One common problem with model specifications such as the one used in this paper is the issue of endogeneity. In particular, trade openness could be endogenous to output growth. To check for the presence of endogeneity, we conduct the Durbin-Wu-Hausman test and do not find supporting evidence to reject the null hypothesis of no endogeneity.[8]

We then proceed to control for the effects of PTAs on output growth and observe two interesting results: a) the coefficient for trade openness increases or remains the same in magnitude and its statistical significance increases as we include the categorical variables for PTAs; and b) the coefficients for all PTAs control variables are negative and statistically significant in case of multicountry PTAs while they are either significantly positive or negative and statistically insignificant in case of bilateral regional PTAs. Thus, our empirical evidence clearly indicates that mul-

Table 3

Pooled LS Ceteris Non Paribus Economic Growth Estimates with Real GDP per worker PPP chain growth as Dependent Variable for 1951-2003

	Models						
	1	2	3	4	5	6	7
WTO	0.006						0.007
	(0.146)						(0.043)
Number of Bilateral PTA		0.002				0.004	0.003
		(0.415)				(0.087)	(0.178)
Extraregional Bilateral PTAs			0.013			-0.005	-0.003
			(0.455)			(0.799)	(0.865)
Number of Multicountry PTA				0.001		0.000	-0.003
				(0.321)		(0.971)	(0.270)
Extraregional Multicountry PTA					-0.008	-0.016	-0.016
					(0.321)	(0.050)	(0.042)
N° of obs	898	898	898	898	898	898	898

No constant reported

Values in parenthesis are p-values

ticountry PTAs are not growth-creating but growth-diverting. When controlling for the presence of PTAs we observe an increase in the magnitude of coefficient of trade openness. This seems to indicate that trade openness reduces the negative effect of PTAs in the allocation of resources in most cases. This is to say that increases in trade openness resulting through markets — *de facto* — are growth enhancing, confirming our null hypothesis. In support of these results, we note that Krueger (1999) provides evidence indicating that MERCOSUR has greater potential for trade diversion; while Kuwayama et al. (2005) find that trade liberalization in Latin America shows no real evidence of output growth acceleration. Finally, the decade-dummy variables have positive signs with the exception of the lost decade of the 1980s, as expected.

The dynamic results in Table 2 yield the same basic conclusions as the static ones do. However, the new estimations allow to decompose effects into short-run and long-run, while adding a dynamic speed of adjustment parameter. The dynamic specification increases overall explanatory power as indicated by consistently higher R^2 values. Our estimates for the ECM parameter are consistent across model specifications with a value of 0.48 and statistically significant at the 1% level, indicating that it takes a little over 2 years for any deviation from the long term equilibrium relationship to dissipate.

Several aspects of the dynamic estimations are worth mentioning. First, long-run estimates for trade openness are greater than the corresponding short-run. This result indicates that there are significant long term implications of trade openness on output growth as economies in the region are able to derive positive effects in the form of technological development and/or transfer. Nevertheless, the long-run positive gains from trade are obscured by short term losses, as the short term coefficients are negative in magnitude and statistically significant. This result becomes more obvious when the coefficients for PTAs are either negative and statistically significant or positive but statistically insignificant. Only bilateral preferential agreements are positive and significant, when controlling for all other categorical variables. To add to the robustness of the results, we observe that when controlling for the presence of preferential trade agreements, not only are long-run trade coefficients larger than corresponding short-run, but more importantly, long-run trade coefficients increase in magnitude compared to the Model 1 with no controls in Table 2. This is an interesting new result as the evidence appears to indicate that while PTAs may result in increased trade among agreement members, this comes at the expense of economic growth from trade with nonmembers. Yeats (1997) provides concurrent proof indicating that industrial policy within RTAs is distortionary for resource allocation. In a

way, PTAs create a raise to the bottom, as they appear to create immiserizing growth. Our results seem to confirm this argumentation.

Further analysis of the separation of effects under the dynamic estimation reveals another interesting result. The fact that the short term coefficients are negative and larger in magnitude (larger in negative terms) when controlling for PTA (which are negative), is an indication that short term trade openness is driving economies away from allocating resources according to comparative advantages. Partial protectionism in the form of PTAs results in trade diversion and relative inefficient resource allocation. Despite being a puzzling scenario, one can bring forth the argument that PTAs may be creating pervasive incentives for firms to sell to (and buy from) PTA members when otherwise would not be economically efficient under market conditions. Thus, the evidence overwhelmingly indicates that PTAs are diverting trade, and more importantly, resulting in economic growth diversion from long term sustainable growth to short term cash flow away from comparative advantage allocation of resources. Based on these results, we neither find support to the hypothesis that PTAs are growth creating, nor find evidence supporting the fact that PTAs increase trade openness along the lines of comparative advantage. It is only after we control for PTAs that we observe an increase in the long-run trade openness effect on output growth. This is to say that trade outside PTAs seems to be more relevant for sustained per capita output growth in the long-run. Clearly integration via *de facto* creates growth, while integration via *de jure* appears to divert growth. We acknowledge that more empirical evidence is needed to fully confirm these results.

To further explore the role of PTAs and WTO membership on output growth we conducted a third separate set of estimations, with only control variables and no factors of production (trade openness included). The results are reported in Table 3 under the name of *ceteris non paribus* estimations. The idea behind this estimation is to determine what happens when we isolate the effect of categorical variables on output growth. The results, once again, are not encouraging for WTO membership and PTAs. The coefficients for the WTO are now positive and statistically significant at the 15% level with no other controls and at the 4% level when all PTAs are included. This is to say that WTO creates growth only under *ceteris non paribus* conditions. PTA coefficients are not statistically significant or have a negative sign, with the exception of Bilateral PTAs that are positive and statistically significant when combined with other types of PTAs. On the positive side, this new set of estimates provides further evidence of the robustness of the previous Pooled LS and ECM estimations.

Table 4

Pooled LS Estimates with Trade Openness growth as Dependent Variable for 1951-2004

	Models					
	1	2	3	4	5	6
WTO	0.020					0.016
	(0.002)					(0.010)
Number of Bilateral PTA		0.008				0.003
		(0.006)				(0.477)
Extraregional Bilateral PTAs			0.029			0.004
			(0.062)			(0.833)
Number of Multicountry PTA				0.013		0.002
				(0.020)		(0.732)
Extraregional Multicountry PTA					0.022	0.005
					(0.071)	(0.710)
N° of obs	907	907	907	907	907	907

No constant reported

Values in parenthesis are p-values

So far our results have uncovered that trade openness leads to faster growth, confirming the theoretical work outlined earlier in the paper. More importantly, the ECM estimations indicate that the long-run effects are positive and higher than their short-run counterparts, supporting the hypothesis that technology transfers facilitated by trade openness are more important than gains associated with static comparative advantages. This result becomes more relevant as it confirms Yeats' (1997) findings for MERCOSUR showing a major re-orientation of exports toward regional markets. Based on the negative short term parameter estimates, it is possible to argue that some of this export reorientation has not been along the comparative advantage patterns. It is possible that while regional agreement members do export along the comparative advantage lines to non-member markets, this possible positive effect on economic growth is more than offset by the potential misallocation of resources that results from serving the regional market under PTA agreement. At the same time, WTO membership and PTAs categorical variables display negative effects on growth or are not-statistically significant.

There is, however, one more question that still remains unanswered. What are the effects of the categorical variables on trade openness? Results from Table 1 and particularly Table 2, indicate that when controlling for WTO membership and PTAs, the positive effect of trade openness on output growth increases while categorical variables have negative or statistically insignificant coefficients in most cases. However, in order to gain more insights into the relationship between categorical variables and trade openness, we add one more set of estimations, where the rate of growth of trade openness is now the dependent variable. The results of these estimations are reported in Table 4. Individual estimations indicate that each of the categorical variables has a positive effect on trade openness at the 7% confidence level. When estimated together, only WTO membership has a positive and statistically significant effect on trade openness growth, while the rest of the controls become statistically insignificant. Rose (2004, p.111) finds similar results and notes that "GATT/WTO seems to have a huge effect on trade if one does not hold other things constant; the multilateral trade regime matters, ceteris non paribus." These findings seem to imply that membership to preferential trade agreements and WTO results in increased trade openness, but this positive effect does not translate into faster economic growth. Faster trade openness growth is then the result of more trade among preferential agreement members at the expense of non-members. This, combined with the fact that output per worker does not grow faster when controlling for PTAs and WTO, indicates that the increased trade resulting from PTA membership is diverting in nature. Since memberships to PTAs and WTO have positive

effects on trade openness growth (Table 4), we proceed to re-estimate the output growth model in a two-stage process.[9] We first extract the residuals from estimations in Table 4, and then include them in the growth equations with PTAs and WTO categorical variables, in the hope that the residuals would have economic and statistical significance. However, these alternative estimations yield almost identical results to those already reported in Tables 1 and 2.

The results from the different sets of estimations then raise the question: why are PTAs not positively related to output growth, even when they may have resulted in weak increased trade openness? Several explanations are provided. While not all of them may apply directly or they are simply beyond the scope of our study, we present them here for clarification and illustration purposes. First, Krueger (1999 p. 115) sheds some light by indicating that "the welfare effects for the countries within the preferential agreement are ambiguous." Another possible explanation for the controversial nature of these results is found in Duran et al. (2008), as they indicate that "Latin America growth was low and volatile, the exchange rate overvalued during long periods, and inflation and interest rates high." (p.39). In addition, Soloaga and Winters (1999), in regards to MERCOSUR, argue "trade performance was dominated by currency overvaluation rather than trade policy" (p. 11). Finally, Yeats (1997) indicates "products recording the largest shift toward the region are those for which Mercosur has not demonstrated an ability to export competitively elsewhere" (p.20).

Conclusions and Recommendations

Empirical analysis of the effects of PTAs and GATT/WTO membership on output growth using static and dynamic growth estimations is inconclusive. The results of this paper strongly suggest that trade reform based on the proliferation of PTAs does not yield the expected positive results on output growth. This is true for Latin American countries engaging in PTAs. While further research is desirable, the evidence so far points to important policy implications. First, PTAs in Latin America appear to be dominated by trade diversion effects; and secondly, the proliferation of PTAs creates an adverse effect on long-run per capita output growth. In other words, PTAs create an economic growth diversion effect, moving economies away from efficient long term resource allocation. The redirection of trade resulting from preferential ruling among agreement members results, albeit weakly, in more trade openness; yet at the expense of faster economic growth. This result is puzzling and could be controversial.

The decomposition of the effects into short-run and long-run under the ECM model provides a more comprehensive set of effects that are not present under the con-

ventional static model. In this regard, the dynamic results indicate a significant larger positive effect of trade openness on output growth in the long-run over the short-run. These results are more interesting after controlling for PTAs and GATT/WTO membership, given that the long-run parameters increase in magnitude and significance, while categorical variables have negative or statistically insignificant effects on per capita output growth. Further analysis of the data indicates the presence of a weak positive effect of PTAs and GATT/WTO membership on output growth *ceteris non paribus*. That is, only when we do not control for capital, labor, and degree of trade openness, we observe the hypothesized positive effect of integration via *de jure*.

The implications of these results in terms of policy analysis and future research are vast. First, has Latin America followed the wrong path (a race to the bottom) by promoting integration via *de jure*? Or, are there other forces such as exchange rate overvaluation, economy-wide financial crisis, PTAs intrinsic design conflicts, for instance, offsetting the likelihood of positive effects that could be derived from integration *a la* PTA? Either way, it is clear that further research on the role of PTAs on output growth is real and necessary.

Undoubtedly, our results signify the need for further research when attempting to assess the nature and corresponding output growth effects of PTAs and WTO (multilateral) membership. Other relevant areas of research outside the scope of this current paper include the role that institutional factors may play in the reform process as they relate to exchange rate regimes, inflationary processes, the role of democracy, geography and other issues addressed in the literature. Finally, another interesting avenue for future research is to analyze the relative importance of each PTA as they relate to different countries and therefore could potentially have country specific effects on participating countries.

Notes

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2. Aminian, Fung, and Ng (2008) refer to this as the first stage of preferential trade agreements within the context of Import Substitution Industrialization.

3. See Ben-David and Loewy(1998); Keller (2002); Grossman and Helpman (1991); Harrison (1996); Aghion and Howitt (1998); Edwards (1993); and Romer (1990); among others.

4. See Balassa (1978); Barboza (2007); Mbaku (1989); Kavoussi (1984); Tyler (1981); Moschos (1989); De Gregorio (1992); Ram (1985); Edwards (1992, 1993); Harrison (1996); among many others.

5. A detailed summary of the evolution of the trade agreements in Latin America is available in Table A2.

6. See Barboza 2007, Ram 1985; Feder 1982; and Mbaku 1989; among others

7. See Barboza (2007) for further details.

8. The results of the endogeneity test are available from the authors upon request.

9. We thank an anonymous referee for this suggestion.

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Appendix

Table A1
Latin American Countries and year of accession to the World Trade Organization

Country	Year
Argentina	1967
Bolivia	1990
Brazil	1948
Chile	1949
Colombia	1981
Costa Rica	1990
Ecuador	1996
El Salvador	1991
Guatemala	1991
Honduras	1994
Mexico	1986
Nicaragua	1950
Panama	1997
Paraguay	1994
Peru	1951
Uruguay	1953
Venezuela	1990

Source: Selected countries form Rose, Andrew (2004) American Economic Review. 94.1. p 113.

Table A2
Economic Cooperative Agreements in Latin America

	Year of inforce	Type of agreement	Status
Bilateral Agreements			
Regional			
Chile-Argentina	1991	Econ Integration Agreement	Implemented
Mexico-Argentina	1991	Econ Integration Agreement EIA and Free Trade	Implemented
Chile-Mexico	1992/98	Agreement	Implemented
Chile-Bolivia	1993	Econ Integration Agreement	Implemented
Chile-Venezuela	1993	Econ Integration Agreement	Implemented
Chile-Colombia	1994	Econ Integration Agreement EIA and Free Trade	Implemented
Mexico-Bolivia	1994/95	Agreement	Implemented
Chile-Ecuador	1995	Econ Integration Agreement	Implemented
Mexico-Costa Rica	1995	Free Trade Agreement	Implemented
Mexico-Peru	1996	Econ Integration Agreement	Implemented
Mexico-Nicaragua	1998	Free Trade Agreement	Implemented
Chile-Peru	1998	Econ Integration Agreement	Implemented
Mexico-El Salvador	2001	Econ Integration Agreement	Implemented
Mexico- Guatemala	2001	Free Trade Agreement	Implemented
Mexico-Honduras	2001	Free Trade Agreement	Implemented
Mexico- Brazil	2002	Econ Integration Agreement	Signed
Chile-Costa Rica	2002	Free Trade Agreement	Implemented
Chile-El Salvador	2002	Econ Integration Agreement	Implemented

Table A2 *(cont'd.)*
Economic Cooperative Agreements in Latin America

	Year of inforce	Type of agreement	Status
Mexico-Uruguay	2003	Free Trade Agreement	Signed
El Salvador- Panama	2003	Free Trade Agreement	Signed
Extra Regional			
Chile-Canada	1997	Free Trade Agreement	Implemented
Mexico-Israel	2000	Free Trade Agreement	Implemented
Costa Rica- Canada	2002	Free Trade Agreement	Signed
Chile-Korea	2003	Free Trade Agreement	Signed
Chile-United States	2004	Econ Integration Agreement	Signed
Multi-Countries Agreements			
Regional			
CACM (Costa Rica,El Salvador, Guatemala, Honduras)	1961	Customs Union	Implemented
CARICOM (incl. 15 Caribbean countries)	1973/97	Customs Union and EIA	Implemented
LAIA (Argentina, Bolivia, Brazil, Chile, Colombia, Cuba, Equador, Mexico, Paraguay, Peru, Venezuela)	1981	Partial Scope	Implemented
ANDEAN (Bolivia, Colombia, Ecuador, Peru Venezuela)	1969	Custom Union	Implemented
MERCOSUR (Argentina, Brazil, Paraguay, Uruguay, Venezuela joined 2006)	1991/05	Customs Union	Implemented

Table A2 *(cont'd.)*
Economic Cooperative Agreements in Latin America

	Year of inforce	Type of agreement	Status
G3 (Colombia, Mexico, Venezuela)	1995	Free Trade Agreement	Implemented
Chile- MERCOSUR	1996	Econ Integration Agreement	Implemented
Bolivia- MERCOSUR	1997	Econ Integration Agreement	Implemented
Mexico- Central America	2001	Free Trade Agreement	Implemented
Mexico- MERCOSUR	2002	Econ Integration Agreement	Signed
Peru- MERCOSUR	2003	Econ Integration Agreement	Signed
Extrarregional			
NAFTA (Canada, Mexico, United States)	1994	Econ Integration Agreement	Implemented
MERCOSUR- European Countries	1999	Cooperative Agreement	Implemented
Mexico-European Communities	2000	Econ Integration Agreement	Implemented
Mexico- EFTA	2001	Free Trade Agreement	Implemented
Chile- European Communities	2003	Free Trade Agreement	Signed
MERCOSUR- India	2003	Econ Integration Agreement	Signed
Chile- EFTA	2004	Econ Integration Agreement	Signed
Dominican Rep.- Central America- United States	2006	Free Trade Agreement	Signed

Sources: Aminian, Nathalie, K.C. Fung and F. Ng. Integration of Markets vs. Integration by Agreements. Policy Research Working Paper 4546 World Bank. March 2008 p.15-16, & Duran, José et al. (2007) Acuerdos Comerciales entre los países andinos y los Estados Unidos. Cuánto se puede esperar de ellos? Serie Comercio Internacional 77, CEPAL.

Table A3

Descriptive Statistics for 17 Latin American Countries 1950-2004

	Natural Logarithm					Bilateral PTAs	MultiCountry PTAs		
	Population	Real Capital/ Output	Real Trade Openness	Real GDP per worker Chain PPP	WTO Membership	Regional	Extra Regional	Regional	Extra Regional
Mean	8.968	2.551	3.596	9.433	0.487	0.305	0.011	0.536	0.046
Median	8.720	2.572	3.608	9.500	0	0	0	1	0
Maximum	12.112	3.820	5.368	10.307	1	11	2	3	3
Minimum	6.765	-1.656	1.882	8.371	0	0	0	0	0
Std. Dev.	1.236	0.502	0.686	0.439	0.500	1.107	0.114	0.567	0.273
Skewness	0.574	-0.649	0.070	-0.202	0.050	5.668	11.515	0.528	7.246
Kurtosis	2.572	7.521	3.154	2.158	1.003	40.576	150.845	2.712	63.273
Jarque-Bera	57.302	843.544	1.657	33.295	152.50	58728.70	853564	45.66	146510
Probability	0.000	0.000	0.437	0.000	0	0	0	0	0
Sum	8205.51	2334.52	3290.57	8631.59	446	279	10	490	42
Sum Sq. Dev.	1397.10	230.39	430.11	175.97	228.61	1119.92	11.89	293.59	68.07
Observations	915	915	915	915	915	915	915	915	915
Cross sections	17	17	17	17	17	17	17	17	17

Data from the Penn World Tables 6.2, Rose (2004), Aminian et.al (2008), & Duran et al (2007).

Biographical Sketch of Authors

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