

THE ECONOMIC IMPLICATIONS
OF THE PROSPECTIVE FREE TRADE AGREEMENT
BETWEEN THE UNITED STATES AND EGYPT

By

HODA EL-KARAKSY

A DISSERTATION

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy
in the Department of Economics
in the Graduate School of
The University of Alabama

Copyright Hoda El-Karasky 2010
ALL RIGHTS RESERVED

Abstract

Egypt is a fairly large country with a struggling economy, like many others in the region. An improved economic performance in both Egypt and other countries in North Africa and the Middle East has the potential to raise the living standards of millions of people; this in turn could improve the region's political climate. Understanding how factors such as trade policy can affect Egypt is important for policy decisions in the US and Egypt. This issue is thus investigated in three essays that quantify the impact of a prospective bilateral Free Trade Agreement (FTA) between Egypt and the United States (US).

In the first essay, I provide an econometric estimate of the effects of accessing the US market as well as the effects of Egyptian institutional quality on trade. I apply the gravity model to Egypt's trade flows for 2004 and find that the FTA could increase aggregate exports to the US between 140 and 157%.

In the second essay, I examine the effects of participation in the FTA on the inward Foreign Direct Investment (FDI) to Egypt from the US and the rest of the world. I estimate gravity models of bilateral investment for 2005 and find evidence that this prospective FTA would be associated with a reduction of inward FDI to Egypt between 28% and 34% of the 2005 level.

In the third essay, I investigate the current debate over US aid to Egypt, to identify whether participation in an FTA would be a complement or a substitute to US foreign aid. The analysis is based on a country-pair foreign aid difference regression model for 1980 and the years 2004 and 2007. The empirical evidence supports the complementary relationship between

US foreign aid and this prospective FTA: The FTA would lead to increased foreign aid from the US to Egypt.

LIST OF ABBREVIATIONS AND SYMBOLS

CEPII	Centre D'Études Prospectives et d'Informations Internationales
CES	Constant Elasticity of Substitution
CET	Common External Tariff
CPI	Transparency International's Corruption Perceptions Index
CRI	Composite Country Risk Index
CU	Customs Union
ERS	Economic Research Service
EU	European Union
FTA	Free Trade Agreement
FDI	Foreign Direct Investment
GAFTA	Greater Arab Free Trade Area
GDP	Gross Domestic Product
IPR	Intellectual Property Rights
ITC	International Trade Centre
MEFTA	Middle East Free Trade Area
MENA	Middle East North Africa
MERCOSUR	Southern Common Market
MFN	Most-Favored Nation
NAFTA	North American Free Trade Agreement

NAT	Net Aid Transfers
NTB	Non-Tariff Barrier
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
PPP	Purchasing Power Parity
PTA	Preferential Trade Agreement
QIZ	Qualified Industrial Zone
TIFA	Trade and Investment Framework Agreement
UN	United Nations
US	United States
WDI	World Development Indicators
WTO	World Trade Organization

ACKNOWLEDGMENTS

I would like to take this opportunity to thank my advisor, Dr. Paul Pecorino, for his invaluable support, guidance, and encouragement throughout the process. I would also like to thank the other members of my dissertation committee: Drs. Michael Adams, Sam Addy, Sami Dakhliya, Michaël Bonnal and J. Lew Silver.

I would also like to thank Dr. Billy Helms for his support and generous financial support throughout my graduate study at The University of Alabama. I would also like to thank my colleagues and friends for their constant encouragement and discussions.

With my whole heart, I wish to thank my husband, Refaat, and my sons, Emad and Adham. None of this would have been possible without their endless love, support, and encouragement.

CONTENTS

Abstract	ii
List of Abbreviations and Symbols.....	iv
Acknowledgments.....	vi
List of Tables	viii
1. Overview.....	1
2. Quantitative Estimates of the Economic Implications of an Egypt- U.S. Free Trade Agreement	4
3. The Potential Impact of the Free Trade Agreement between Egypt and The US on Inward Foreign Direct Investment to Egypt	31
4. The United States-Egypt Free Trade Agreement and Foreign Aid: Complements or Substitutes?.....	74
5. Overall Conclusions.....	101

LIST OF TABLES

2.1 Mapping GTAP Regions onto 11 Regions	16
2.2 Mapping GTAP Sectors onto the 12 Sectors	17
2.3 Estimation results of Sectoral and Macro Gravity Equations without Transparency Index.....	22
2.4 Estimation results of Sectoral and Macro Gravity Equations with Transparency Index.....	25
2.5 Percentage of Trade Increase with Institution Reforms and Coefficients of the Transparency Index	25
3.1 Countries of Origin and Countries of Destination	43
3.2 “Deep Integration” Provisions of Various North-South PTAs.....	44
3.3 Summary of Regression Results for the Base Model	47
3.4 Summary of Regression Results for the US PTA: Model 1	53
3.5 The Predicted Change in FDI to Egypt with the US PTA/Model 1.....	58
3.6 Summary of Regression Results for the US PTA: Model 2	62
3.7 The Predicted Change in FDI to Egypt with the US PTA/Model 2.....	63
3.8 Summary of Regression Results for “Deep” PTAs: Model 1.....	64
3.9 Summary of Regression Results for “Deep” PTAs: Model 2.....	66
3.10 Summary of Regression Results for “All” PTAs: Model 1	67
3.11 Summary of Regression Results for “All” PTAs: Model 2	68
4.1 Donor and Recipient Countries.....	87

4.2 Summary of Regression Results for the US FTA: 2004.....	91
4.3 Summary of Regression Results for the US FTA: 2007.....	92
4.4 Summary of Regression Results for “All” PTAs: 2004	94
4.5 Summary of Regression Results for “All” PTAs: 2007	95

1. Overview

Egypt is a fairly large country with a struggling economy, like others in the region. Improved economic performance in both Egypt and other countries in North Africa and the Middle East has the potential to raise the living standards of millions of people; this in turn could improve the political climate of the region.

Understanding how factors such as trade policy can affect Egypt is important in policy decisions. This issue is thus investigated in three essays that quantify the impact of a prospective bilateral free trade agreement between Egypt and the US.

The surge in US interest in FTAs raises a question about their impact on the countries that are included in an FTA and on the rest of the world. The potential deep free trade agreement between Egypt and the United States has become a major issue of discussion since the US plan to create a Middle East Free Trade Area (MEFTA) by 2013 was announced. While there are some difficulties associated with this agreement, both countries are expected to be worse off without this agreement because of the trade diversion effects of European Union (EU), Arab League, and Greater Arab Free Trade Area (GAFTA) agreements with Egypt. As a result of this trade diversion, US exports to Egypt are expected to decline. In addition, the need for domestic reforms in Egypt reduces the welfare gains of any current agreement.

Egypt needs to improve its economic performance in order to enhance the living standards of millions of people in this region. Therefore it is important to understand how an FTA with the US could affect the Egyptian economy. In this dissertation I investigate this issue and quantify the impacts of this prospective FTA.

In the first essay of the dissertation I provide quantitative estimates of the trade impacts of this prospective FTA. I focus on the effects of the two main elements associated with this FTA: easier access to US markets and the required preliminary institutional reforms in Egypt. I

apply the gravity model to Egypt's trade flows for the year 2004 and estimate trade impacts of this FTA on Egyptian trade flows. The study demonstrates the need for national institutional reforms in Egypt by assessing the importance of corruption in trade relations. This is accomplished by including Transparency International's Corruption Perceptions Index (CPI) for the exporting and importing countries in the gravity equation. The main findings are that (a) the gravity model provides a good fit for Egypt's trade patterns, (b) this prospective FTA can increase aggregate exports to the US by about 140 %, and (c) if Egypt can improve its domestic institutions in response to this FTA, the volume of aggregate exports to the US can increase by 157% of the 2004 level.

In the second essay, I provide quantitative estimates of the impact of this prospective FTA on FDI by estimating gravity models of bilateral investment. The results suggest that this FTA is not as benign as some empirical assessments have suggested. A careful consideration of some analytical issues accounts for less favorable findings in this study. These analytical issues include adding a condition that the FTA must be a deep agreement, testing explicitly for Egypt's relationship pre-and post-FTA with the US and with all other countries to capture the "external effects" of a Preferential Trade Agreement (PTA) on FDI, and finally creating an index of the extensiveness of deep integration provisions that exist in the US trade agreements, in order to separate the effects of deep integration provisions on FDI. The paper finds evidence that this prospective FTA would be associated with a reduction of inward FDI to Egypt between 28% and 34% of the 2005 level.

In the third essay, I investigate the debate about the expected relationship between US aid and this prospective FTA and whether they are complements or substitutes. I estimate explicitly the change in US aid to Egypt that would be associated with this FTA, i.e. US aid pre-and post-

FTA. The analysis is based on a country-pair foreign aid difference regression model for 1980 and the years 2004 and 2007. The empirical evidence supports the complementary relationship between US foreign aid and this prospective FTA, which means that the FTA would lead to increased foreign aid from the US to Egypt.

Furthermore, the study examines the effects on US aid to Egypt of the necessary economic and political reform required for achieving this FTA. This is accomplished by including the index of bureaucracy quality and the composite country risk index in the aid equation. The results provide some evidence that improvements in institutional quality will lead to higher aid levels, but the estimates for this effect are not robust.

2. Quantitative Estimates of the Economic Implications of an Egypt-U.S. Free Trade Agreement

2.1. Introduction and Motivation

Since May 2003, when President Bush announced his plan to create a Middle East Free Trade Area (MEFTA) by 2013, a potential free trade agreement between Egypt and the United States (US) has become a major issue of discussion. MEFTA's purpose is to increase US trade relationships with all countries of the region. Since its announcement, the US has concluded Free Trade Agreement (FTA) negotiations with Bahrain, Morocco, Oman, and the United Arab Emirates and signed Trade and Investment Framework Agreements (TIFAs) with Kuwait, Qatar, Saudi Arabia, and Yemen.

Like Algeria and Tunisia, Egypt had already signed a TIFA with the United States. Efforts to negotiate an FTA with the US started in the late 1990s and ended with the signing of the TIFA in 1999. The aim of this agreement is to help Egypt develop its institutions and rules of commerce, integrate its economy into the global economy, and foster the development of bilateral investment treaties and comprehensive FTAs. Since the 1990s, there has been progress in the economic integration between Egypt and the US. For instance, Egypt has made significant reforms in tariff and tax structure and also made efforts to improve its economic standards, rules, and regulations. In December 2004, Egypt renewed its commitment to the FTA with the US by signing the Qualified Industrial Zone (QIZ) agreement. However, despite these reforms in the

Egyptian economy and progress in the economic relationship between Egypt and the US, both parties have so far been unwilling to fully accept this FTA. This could be the result of difficulties associated with this agreement, namely a potential conflict of interests for Egypt and its trading partners, notably the European Union (EU). The close relations between Egypt and the US might also raise political conflicts in the region given the conflicts in Iraq and Palestine. Finally, Egypt must engage in necessary economic and political reform since the proposed FTA includes political clauses that guarantee democracy, the rule of law, human rights, and respect for and protection of minorities.

Despite these difficulties, an FTA is important for both countries. For Egypt, it would guarantee access to the large US market and increase exports and investments by both foreign and local firms; this, in turn, would benefit Egyptian consumers through downward pressures on domestic prices and increased competition and choices in the domestic market. Moreover, the FTA would stimulate further reforms of the Egyptian economy, which would entail an increase in efficiency. Finally, Egypt needs this FTA to reduce trade diversion associated with EU and Middle East North Africa (MENA) agreements and to avoid a growing disadvantage in relation to the US's other trading partners that might benefit from Preferential Trade Agreements (PTAs).

For the US, there is a need to develop its economic relationship with Egypt to match the political relationship that the two countries already share. This FTA will advance the US administration's initiative to create a Middle East Free Trade Area (MEFTA).¹ A deep agreement eliminates other barriers that US firms may face in Egypt and offers better access to the Egyptian markets. It would also prevent Egypt from becoming exclusively oriented towards European markets, which could cause Egypt's economic standards, for example, to become more

¹ As the largest market in the region, Egypt is a cornerstone for any successful regional free trade area.

and more EU-oriented. Finally, it is in the US's best interest to reduce the trade diversion effects of the Arab League and the Euro-Mediterranean agreement.

This paper focuses only on the FTA's impact, in terms of both cost and benefit, on Egypt's economy. If the results support the hypothesis that preferential trade agreements lead to an expansion of trade between member countries, which sectors will gain most from this FTA? This study will provide some possible answers to these questions.

Following Lejour and de Mooij (2005), I estimate the potential trade volume results from easier access to US markets for 12 different sectors with the gravity model. Furthermore, the economic and political adjustments that are required for achieving this deep FTA could act as a catalyst to improve institutions in Egypt. Many institutional indicators show that Egyptian institutions are less market-oriented than those of the US. Therefore this study investigates the extent to which institutional reforms could benefit the Egyptian economy by improving its competitive position. I estimate the potential trade volumes between Egypt and the US taking into account the institutional reforms and include the transparency index for importer and exporter countries separately in the gravity equation.

The rest of this paper is organized as follows. Section 2 is a review of the current regional integration and the prospective bilateral trade agreement between Egypt and the US. Section 3 is a brief survey of the gravity approach to trade. Section 4 is the data description and model setup. Section 5 discusses basic results. Section 6 discusses the role of the FTA as well as the role of institutions in promoting bilateral trade. Finally, section 7 concludes.

2.2. Literature Review of the Current Regionalism

A regional (or preferential) trade agreement is a broad type of trade arrangement between two or more countries, where member countries impose lower tariffs on imports from each other

than on imports from the outside world. Preferential trade agreements include free trade areas, customs unions, common markets, and economic unions.

A Free Trade Area is a PTA with zero tariffs on trade among its members, while an FTA allows the imposition of different tariffs by partner countries on imports of similar goods from the outside world. A Customs Union is an FTA with a Common External Tariff (CET) for all members.

2.2.1 Deep Integration

Deep integration refers to the possibility of harmonizing economic policies among member countries for closer economic relations. The objective of these agreements is to eliminate administrative and regulatory barriers in order to expand international trade and foreign investment within member countries. These barriers take many forms, including customs procedures, product standards and certification systems, qualified licensing systems, intellectual property rights enforcement, and Foreign Direct Investment (FDI) policies. In addition, if the integration is among less developed countries, deep integration could include some provisions to improve insufficient or outdated infrastructure.

Deep integration is an essential characteristic of many new regional agreements. The European Union and the North American Free Trade Agreement (NAFTA) are recent regional arrangements that are not “traditional” but deep agreements in their movement beyond the removal of tariffs and quotas. For instance, the EU plans for full economic and monetary union for its members by deepening its relationships under the single European Act and the Maastricht Treaty. Also, NAFTA establishes free movement for capital and includes provisions for international cooperation, as well as side agreements on labor standards and the environment.

From traditional (shallow) to deep regional integration. Deeper integration does not necessarily imply a more efficient agreement. The result depends on the policies that are

harmonized and the countries that apply it. For example, a deep agreement that imposes measures that are not sustainable for the countries' level of development reduces its economic efficiency. In contrast, a deep agreement that puts in place measures to enhance efficiency and improve domestic institutions is a better agreement (Schott, 2004).

Over the past two decades regionalism has changed significantly to involve more countries, both developed and developing, in reciprocal trade agreements. Current regional agreements are motivated by the desire to enhance trade and to facilitate international investment and the operations of multinational firms. The EU and NAFTA are examples of these current regional arrangements.

There are two factors behind the current wave of regionalism: the problems faced by multilateral trade liberalization and the globalization of economic activity. Trade liberalization at the multilateral as well as the regional level faces some problems: it is relatively easy to conclude regional agreements among a small number of countries, but it is difficult to achieve an agreement among a large and more diverse group of countries such as all World Trade Organization (WTO) members. Moreover, regional agreements enable the exploitation of economies of scale by moving from national to regional specialization. Frequently, however, the allocation of industries among developing nations has been the result of bureaucratic bilateral negotiations rather than comparative advantage. In addition, there is a loss of tariff revenues that could result in a welfare loss in the case of trade diversion.²

Globalization and global interdependence affect current regional agreements in that their specifications correspond to the need for larger markets, the ability to operate abroad, and the need for FDI in goods and services. Market access becomes crucial for success with globalization: large international markets are important not only for trade but also for economies

² See Lawrence (1998).

of scale. It is important for developing countries to attract foreign investment and enhance exports in order to increase their ability to compete in large markets; these countries also need to emphasize a reduction in investment as well as trade barriers. For developing countries, in order to attract FDI and to enhance exports, they must establish their credibility by improving their institutions and domestic regulatory system. For developed countries, the ability of firms to operate abroad raises the relatively important issues of the effects of domestic regulations, taxes, intellectual property rights, and technical standards, which determine the conditions that firms will operate under abroad. These motivations require deeper forms of regional integration that go beyond the removal of border barriers to establish common rules and institutions at supranational levels.

New trade theory and deeper integration. Traditional trade theory is not sufficient to analyze the economic effects of current (deep) regional integrations. The traditional analysis of PTAs reflects the theory of the second best.³ Lawrence (1996) claims that deep integration could be “first best” because some activities may best be carried out on a global level, some on a regional level, and some at the national level. Valuing currency and determining intellectual property rights are examples of activities that may be best carried out at the regional rather than the global level. The traditional analysis also builds on assumptions of trade creation and trade diversion that may not hold. For example, it is often presumed that PTAs will reduce exports from outside the region. However, deep agreements that adopt tougher pollution controls or labor standards could lead to an increase in imports of products from countries with more lenient standards. Moreover, traditional analysis shows that a reduction in external trade is often an

³ Lawrence (1996) notes that the general theory of second best states that reducing some distortions while others remain in place does not necessarily increase welfare. If it is impossible to satisfy all optimum conditions (in this case, global free trade), then a change that brings about satisfaction of some of the optimum conditions (in this case a free trade area) may make things better or worse.

indication of trade diversion: members buy from less efficient firms within the PTA. However, deep agreements enhance efficiency among members, which can cause trade diversion that is not welfare reducing. The traditional theory holds the efficiency of firms within the PTA constant.

Traditional trade theory does not explain the widespread use of deep regional agreements. However, Helpman and Krugman (1985) and Krugman (1995) explain this widespread use under the rubric of “the new trade theory.” The existence of imperfect competition leads to monopolistic profits especially if combined with increasing return to scale, barriers to market entry (technological or policy barriers), and product differentiation. Therefore regional trade liberalization can lead to net trade creation and significant welfare gains (relative to the traditional analysis) for member countries by having a pro-competitive effect.

Abstractly, with deep integration, the elimination of administrative and regulatory barriers increases international trade and foreign investment, leading to cost reductions in both producing and distributing traded goods and services, which should increase the economic welfare of member countries. However, there is uncertainty about these welfare gains since they depend on policies being harmonized and on the countries to which they are applied.

2.2.2 The Prospective FTA between Egypt and the US

Studies that evaluate the prospective FTA between Egypt and the US include that of Galal and Tohamy (1998). The authors support neither the shallow nor the deep FTAs between Egypt and the US, arguing that the shallow agreement is not complete and the deep agreement is undesirable since it affects national sovereignty and differentiates between the developed and the less-developed country. Galal and Tohamy suggest an eclectic agreement: a combination of shallow and deep agreements that includes trade liberalization with harmonization of some domestic policies and regulations. The authors admit the difficulty of defining the eclectic FTA or predicting its implications; however, they support it for the following reasons: Egypt needs

this FTA to reduce trade diversion associated with the EU and MENA agreements; the Egyptian economy is ready for this FTA, especially with the significant reforms started in the 1990s; finally, the current debate in the US Congress over aid to Egypt necessitates this agreement.⁴

Galal and Lawrence (1998, 2003, and 2005) evaluate different types of free trade agreements between Egypt and the US, including shallow and deep agreements, to select the optimal one. According to their 1998 results, there is no consensus on an optimal agreement. However, they support deepening the relationship between Egypt and US for different reasons: the recent shift in US trade policy towards regional integration, the recent reduction in US aid to Egypt, and the US's need to reduce the trade-diverting effects of the Arab League and the Euro-Mediterranean agreement. Galal and Lawrence's 2003 results support a deep FTA that includes institutional reforms in its terms, since international agreements and domestic reforms are complementary activities.

Galal and Lawrence (2005) support this FTA for several reasons: the important role of Egypt in the Middle East, the reinforcement of the economic reforms in Egypt, and the strong relationship between Egypt and the US. According to their study, the deep agreement is the optimal one, but it should involve some measures to assure transparency in Egypt (in order to attract foreign investment); it should also include the removal of Non-Tariff Barriers (NTBs) and administrative barriers to trade. The authors point out some of the expected results of this agreement. On the one hand, it could boost domestic reform, increase welfare gains for Egypt, and stimulate regional reform. On the other hand, it could help the US avoid the reduction in exports to Egypt that could result from the Egyptian agreements with the EU and the Arab countries and improve the American-Egyptian relationship.

⁴ This debate suggests uncertainty of the US's aid to Egypt. The FTA is therefore an alternative to maintain economic relationships between the two countries.

The expected static economic gain from the prospective FTA between Egypt and the US has been estimated using different approaches, i.e. general equilibrium, partial equilibrium analysis, and gravity estimation. Hoekman, Konan, and Maskus (1998) use a static general equilibrium model to estimate the implications of three different types of agreement:⁵ the first one assumes the completion of the partnership agreement with the EU and the Arab League FTA but does not deal with NTBs; the second one extends the first to include a shallow trade agreement with elimination of tariffs on imports from the US to Egypt, and Egypt in return is granted duty-free and quota-free access to US markets; the third is a deep agreement that includes the elimination of tariffs and NTBs on both goods and services applied on a nondiscriminatory basis (Most Favored Nation [MFN]). The results of this study show that there is an expected static economic gain for Egypt from any agreement with the US, shallow or deep. This gain is small but positive and can be more significant if it is combined with domestic reforms that would be difficult to achieve without this FTA. For the US, the absolute expected static economic gains are large relative to those of Egypt, but small relative to the US economy.

Building on the results of Hoekman et al. (1998), Lawrence (1998) estimates from the US perspective the implications of two different types of FTA with Egypt using partial equilibrium analysis. The first trade agreement is called “the traditional GATT FTA” in which only border tariffs are removed; US-Israel and Euro-Med agreements are examples. The second type, called “a WTO-plus arrangement,” includes removing NTBs and other elements of reform; the NAFTA agreement is an example of this type. The results show that while the traditional agreement does not advance Egyptian domestic reforms or its relationship with other countries, the WTO-plus agreement improves Egyptian growth and supports regional economic growth and trade. Also,

⁵ The NTBs are modeled with a revenue generating effect such that trade liberalization generates more loss in tariff revenues. The authors assumed endogenous change in general sales tax to offset this loss in tariff revenues.

for the US, this study shows that the WTO-plus agreement lessens the reduction of US exports to Egypt that could result from the Euro-Med and Arab League agreements. Lawrence supports the deep agreement since it eliminates other barriers that US firms may face in Egypt and gives it better access to Egyptian markets. Finally, it would boost the US multi-track approach in the Middle East area.

More recently, Hoekman and Konan (2005) estimate the static impact of eleven types of FTA, including shallow and deep agreements, using a new version of the model used previously in Hoekman et al. (1998).⁶ In addition to previous results, this study shows that the volume of Egypt's exports to the US is limited by anti-export bias in Egypt; there is also the possibility of better access to the US markets if this agreement is associated with institutional reforms in Egypt.

The economic implication of an FTA between Egypt and the US has been analyzed in gravity model setups by DeRosa and Gilbert (2003). They use the gravity approach to estimate bilateral trade agreements between the US and more than 20 prospective partner countries, including Egypt as a member of the MENA-FTA. According to the results of this study, an FTA brings an increase in the bilateral exports between Egypt and US; this increase is larger for the US. While Egyptian exports increase from \$894.7 million to \$1,951.8 million, US exports to Egypt increase from \$3,729 million to \$8,135 million.

Without an agreement between Egypt and the US, both countries are expected to be worse off because of the negative effects of EU, Arab League, and Greater Arab Free Trade Area (GAFTA) agreements: the Egyptian economy would have a trade diversion and US exports to Egypt would

⁶ This model has been used in Maskus and Konan (1997), Hoekman, Konan and Maskus (1998), Hoekman and Konan (2001), Konan and Kim ((2004), Konan, Maskus and the World Bank (2004), and Hoekman and Konan (2005)

decline. Moreover, the existence of NTBs and the need for domestic reforms in Egypt reduce the welfare gains of any current agreement.

2.3. A Brief Survey of the Gravity Literature

Gravity modeling is an empirical approach that has been applied in cross-country analyses of bilateral international trade flows. Tinbergen (1962) and Poyhonen (1963) are the first scholars to apply the gravity model to analyze international trade flows. The gravity model has thereafter been applied successfully in a variety of contexts and become a popular tool in the empirical analysis of international trade. The widespread use of gravity models in the study of international trade could be explained in part as a result of increasing interest in economic geography. The research in this area has evolved at both theoretical and empirical levels. Since the second half of the 1970s, several theoretical researchers such as Anderson (1979) and Helpman and Krugman (1985) supported the use of the gravity model. The theoretical foundations of the gravity model find their roots within the framework of the international trade theory based on imperfect substitutes, increasing return to scale, and differentiated products.

Anderson (1979) is the first to derive the gravity equation assuming differentiated goods. Helpman and Krugman (1985) employ the gravity model using differentiated goods with increasing returns to scale, while Bergstrand (1989) and Deardorff (1998) argue that the gravity approach is consistent with traditional trade theories that emphasize factor endowments and technology gaps. They also argue that the gravity approach is consistent with new trade theories focusing on the role of market imperfections and differentiated products. Finally, Anderson and Wincoop (2001) derive an operational gravity model based on the Constant Elasticity of Substitution (CES) structure of demand to solve the so-called border puzzle. The differences in

these theories help explain the specifications of different models and the diversity of the empirical applications' outcomes.

Since the 1990s, the gravity approach has been widely used to evaluate whether regional agreements and other forms of PTAs such as FTAs result in expanded bilateral trade among member countries, and if so, to what extent. The dummy variable method has been used for this purpose by including a dummy variable in the standard gravity model. This method continues to be used in many studies; the econometric results support the hypothesis that PTA leads to a significant expansion of trade among member countries (Frankel, 1997). Frankel, Stein, and Wei (1995, 1996) evaluate the implications of EU, NAFTA, the Southern Common Market (MERCOSUR), and the ASEAN Free Trade Area (AFTA). They find significant positive effects of the MERCOSUR and the AFTA, but for the EU or NAFTA. Recently, DeRosa and Gilbert (2003) used the gravity approach to estimate the economic implications of the bilateral trade agreements between the US and more than 20 prospective partner countries including Egypt. They predict an increase of Egyptian exports to the US by 118%.

Recent research in international trade has pointed out the importance of institutions in international trade. Anderson and Marcouiller (2002) are among the contributors to the literature who have extended institutional analysis of the economy to international trade. Koukhartchouk and Maurel (2003) include variables reflecting institutional quality in the gravity model to analyze the effects of joining international institutions on trade patterns.

The empirical specification of the gravity equation applied in this paper is based on the work of Lejour and de Mooij (2005), who examine the economic implications of Turkey's accession to the EU. The study demonstrates the importance of national institutional reforms in Turkey by assessing the effect of corruption on trade relations. They include a multiplicative

construct of Transparency International's Corruption Perceptions Index for the exporting and importing countries in the gravity equation. This is the approach to be used in this study, but I will include the transparency index for importer and exporter countries separately.

2.4. Data Description and Model Setup

This study involves 11 regions (or countries) and 12 sectors (or industries). The regions (see Table 2.1) are Canada, Chile, Egypt, the EU, Jordan, Israel, Mexico, Singapore, USA, rest of MENA, and rest of world.

Table 2.1: Mapping GTAP Regions onto 11 Regions

No.	Name	Member Regions (226)
1	Canada	
2	United States of America	
3	Mexico	
4	Chile	
5	Singapore	
6	The European Union	
7	Israel	
8	Jordan	
9	Egypt	
10	Rest of MENA	Turkey, Bahrain, Iran, Islamic Republic of, Iraq, Kuwait, Lebanon, Palestinian Territory, Occupied, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates, Yemen, Morocco, Tunisia, Algeria, Libyan Arab Jamahiriya
11	Rest of the World	(Rest of) Oceania, (Rest of) East Asia, Rest of Southeast Asia, (Rest of) South Asia, Rest of North America, (Rest of) Andean Pact, Rest of South America, Central America, Rest of Free Trade Area of the Americas, Rest of the Caribbean, Rest of Europe, Rest of Former Soviet Union, (Rest of) South African Customs Union, (Rest of) Southern African Development Community, (Rest of) Sub-Saharan Africa

Note that Canada, Chile, Israel, Jordan, Mexico, and Singapore each had a bilateral free trade agreement with the US in effect by 2004.

The sectors (see Table 2.2) are agriculture, raw materials, food processing, textiles, nonmetallic minerals, energy-intensive goods, other manufacturing, metals, fabricated metal products, machinery and equipment, electronic equipment, and transport. For the distance variable and other dummies usually used in the gravity model, I used a representative member for the EU, rest

of MENA, and rest of world according to their population: Germany represents the European Union, Turkey represents the rest of MENA, and China represents the rest of the world.⁷

Table 2.2: Mapping GTAP Sectors onto the 12 Sectors

1 Agriculture	Paddy rice, wheat, cereal grains nec, vegetables, fruit, nuts, oil seeds, sugar cane, sugar beets, plant-based fibers, crops nec
2 Raw material	Bovine cattle, sheep and goats, horses, animal products nec, Wool, silk-worm cocoons, forestry, fishing
3 Food Processing	Coal, oil, gas, minerals nec
4 Textile	Bovine meat products, meat products nec, vegetable oils and fats, dairy products, processed rice, sugar, food products nec, beverages and tobacco products
5 Nonmetallic Minerals	Textiles, wearing apparel, leather products
6 Energy-intensive Goods	Mineral products nec
7 Other Manufacturing	Petroleum, coal products, chemical, rubber, plastic products
8 Metals	Wood products, paper products, publishing, manufactures nec
9 Fabricated Metal Products	Ferrous metals, metals nec
10 Machinery and Equipment	Metal products
11 Electronic Equipment	Machinery and equipment nec
12 Transport	Electronic equipment
	Motor vehicles and parts, transport equipment nec

I estimate the coefficients for the 12 sectors with Ordinary Least Squares (OLS) estimation using a cross-section of 11 regions for 2004. The national income and population data come from World Development Indicators (WDI); bilateral trade data come from USDA Economic Research Service (ERS)⁸; tariff data are from the International Trade Centre (ITC)⁹; the export tax data come from the Food and Agriculture Organization of the United Nations¹⁰. For bilateral distance data and common dummy variables used in gravity equations, I use data from the Centre D'Études Prospectives et d'Informations Internationales (CEPII). Finally, for the institutional effect I use Transparency International's Corruption Perceptions Index.

⁷ While some studies made some ad hoc choices for distance variable, i.e. Lejour and de Mooij (2005), some used methodologies based on population, i.e. CEPII. After making some ad hoc choices, I found that it is better to choose representative countries according to the highest population.

⁸ Thanks to Dr. Mark J. Gehlhar, Economic Research Service, for providing these data.

⁹ Thanks to Mr. Pichot at the ITC for providing these data.

¹⁰ Thanks to Aziz Elbehri, Economic Research Service, USDA for providing these data.

I estimate the gravity equations at the industry level. The exact specification of the gravity equation is¹¹

$$X_{hbi} = \alpha_i + \beta_{1i} D_{hbi}^{US} + \beta_{2i} d_{hb} + \gamma_{hi} Y_h + \gamma_{2i} y_h + \gamma_{3i} Y_b + \gamma_{4i} y_b + \sum_d \delta_{di} D_d + \nu_{1i} T_{hbi}^M + \nu_{2i} T_{hbi}^X + \varepsilon_{hbi}$$

where all real variables are defined in logs, X_{hbi} stands for exports from country h to country b in industry i , Y (y) is the Gross Domestic Product (GDP)/ (per capita) of the exporting and importing countries, d stands for the distance between the capitals of countries h and b , and D^{US} is a dummy that equals unity if the country and the US have a pre-existing FTA and zero otherwise. The variable T_{hbi}^M is the import tariff levied by country b on country h exports, and T_{hbi}^X is the export tax levied by country h on country b .¹² D_d is a set of dummies indicating whether the two countries are contiguous (contig), have had a common colonizer after 1945 (comcol), have ever had a colonial link (colony), have had a colonial relationship after 1945 (col45), are currently in a colonial relationship (curcol) or were/are the same country (smctry), or share a common language. There are two common language dummies: the first indicating whether the two countries share a common official language (comlang_off), and the second whether a language is spoken by at least 9% of the population in both countries (comlang_ethno).

The estimated coefficient for the US dummy is the one of particular interest. If significant, this dummy will be used to calculate the potential trade increase, which equals the difference between the initial trade level, where the dummy equals zero, and the potential trade

¹¹ See Lejour, de Mooij and Nahuis (2001): Appendix B.

¹² As many tariff rates are zero, I use $T_{hri}^M = \log(1 + t_{hri}^M)$.

level, where the dummy equals one. For example, if $\beta_i = 0.60$, the potential trade increase will be the difference between the $\exp(0.60)$ and the $\exp(0)$, i.e. $1.94 - 1 = 94\%$.

2.5. The Basic Results

Table 2.3 reveals the estimation results of the gravity model. It shows that the gravity model works well: countries that are far apart trade less, while countries with large economies trade more. That is, while distance reduces trade, a large GDP expands it. The distance coefficient is negative and significant in all sectors, at the aggregate macroeconomic level as well as at the sectoral level. Distance is negatively related to the volume of bilateral trade. The coefficients of distance (and GDP) are interpreted as elasticities or percentage changes in bilateral trade for a one-percent change in distance (and income). According to my estimates, a 1% increase in bilateral distance reduces trade in most sectors, as seen in Table 2.3. However, the size of the estimated coefficient of food processing compared to other manufacturing is smaller, implying that distance matters less than for the other manufacturing sector. This result is intuitively clear if we consider, for example, the transportation costs of wood products in Table 2.2. Also, since we focus on exports rather than on total bilateral trade, I examine the effect of GDP on trade for both the country of origin and the country of destination. The results indicate that the coefficients of GDP are positive and statistically significant at both the aggregate macroeconomic and sectoral levels: only three of these coefficients are less than 1, but this is common in the literature. Overall, the effects of distance and GDP are both statistically and economically significant and support prior evidence from the literature.

Furthermore, I include in the model variables that account for shared historical, political, and cultural background. Countries sharing a preferential trade agreement, i.e. FTA, trade more, as do countries sharing a language or land border. Landlocked countries trade less, as do

physically larger countries. A shared colonial history supports trade. These effects are sensible and explain almost two-thirds of the variation in bilateral trade. Thus the gravity equation seems to do a good job in explaining most of the reasons why international trade varies across nations.

2.6. The Role of the FTA and Institutions

2.6.1 The Role of the FTA

In this section I analyze the effect of access to the US market. In Table 2.3, I report the estimates of the gravity equation. All real variables are defined in logs. The last column of Table 2.3 shows the trade increase that corresponds to the estimated US dummy; it shows the potential trade increase as a percentage of the current trade volume. For industries with an insignificant dummy, we assume that the dummy variable is zero. Therefore accession to the internal market is assumed to have no impact on trade. The gravity model results indicate the expected magnitude of expansion in bilateral trade but do not differentiate between the effects of trade creation and trade diversion. Therefore the gravity model estimates of the effects of a free trade agreement with the US can be considered as the gross trade impacts of the prospective free trade between Egypt and the US. In particular, these estimates are interpreted here as an upper bound on the potential magnitude of trade creation (DeRosa & Gilbert, 2003).

At the aggregate macroeconomic level, the US dummy has a positive and significant coefficient at the 5% confidence level. This means that bilateral trade is higher if an FTA exists between the exporter country and the US. At the sectoral level, some coefficients are significant and some are insignificant. The insignificant dummies may refer to industries where either the internal market has not progressed much or technical barriers to trade are unimportant. An example is the high and positive but insignificant coefficient for agriculture and raw materials. This may be due to oil and gas (raw materials) being intensively traded between countries; here there is no statistical difference between countries that have a free trade agreement with the US

and those that do not. However, in our analysis, this insignificance could also be explained by the small number of observations. For example, in the subsample of the metal sector, this coefficient is negative but insignificant. The largest impact is in the food processing, textile, other manufacturing, and transport sectors. I find high and significant dummies for these sectors (significant at the 10% confidence level). The last column of Table 2.3 shows the trade increase that corresponds to the estimated US dummy. In particular, Egyptian exports are predicted to expand in the food processing, textile, other manufacturing, and transport sectors by 237%, 267%, 390%, and 384% respectively. Also, it shows that Egypt's aggregate trade with the US can increase by around 142 %, compared with the trade level in 2004, if there is an FTA between Egypt and the US.

Import tariffs coefficients are negative and statistically significant at the aggregate macroeconomic level and in the non-metallic minerals sector. The coefficients for the other sectors are insignificant except for the food processing sector, where it is positive and significant. This positive and significant coefficient suggests that greater tariffs are associated with higher bilateral trade flows, which could be explained, given the cross-sectional nature of the data, by the fact that import tariffs are set in response to heavy import volumes. Furthermore, the export subsidies coefficients are negative, which suggests a reduction in exports. Table 2.3 shows that the coefficient of export subsidies is negative and significant at the aggregate macroeconomic level. The coefficients are negative and insignificant in agriculture and food processing and are dropped for the other sectors. These results are ambiguous and could be considered spurious outcomes (Lejour, de Mooij , & Nahuis, 2001; Philippidis & Sanjuan, 2006).

Table 2.3. Estimation results of Sectoral and Macro Gravity Equations without Transparency Index

	Sector 1	Sector 2	Sector 3	Sector 4	Sector 5	Sector 6	Sector 7	Sector 8	Sector 9	Sector 10	Sector 11	Sector 12	Macro US dummy
FTAUS dummy	0.8273	0.8242	1.2134*	1.3015*	0.4607	0.5720	1.5899*	-0.1664	1.0038	0.7593	0.5369	1.5760*	0.88178**
Std. Err.	0.5966	1.4925	0.6369	0.7248	0.8094	1.0842	0.6429	0.8084	0.9611	0.9449	1.5007	0.8333	0.3018
Exporter GDP	1.2744	1.2809	1.4397	1.4723	1.5312	1.2599	1.5404	1.4904	1.4888	1.5842	1.6773	1.6748	1.3330
Std. Err.	0.0795	0.1921	0.0845	0.0889	0.1008	0.1337	0.0787	0.1034	0.1203	0.1133	0.1859	0.1050	0.0384
Importer GDP	0.8407	(dropped)	0.8029	1.3205	1.2754	1.1506	1.2383	1.3149	1.1724	1.1541	1.2848	1.0953	0.9782
Std. Err.	0.0791	0.2445	0.0868	0.0958	0.1070	0.1415	0.0837	0.1083	0.1273	0.1273	0.1983	0.1116	0.0398
Exporter GDP per capita	-0.5242	-1.3389	-0.7805	-0.7321	-0.6639	-0.4048	-0.0727	-0.6416	-0.1489	0.0922	0.3780	-0.1609	-0.4958
Std. Err.	0.1038	0.2445	0.1136	0.1258	0.1424	0.1867	0.1134	0.1426	0.1677	0.1644	0.2643	0.1463	0.0527
Importer GDP per capita	-0.5323	0.6178	-0.5431	-0.2436	-0.6283	-0.1475	-0.3882	-0.4759	-0.4939	-0.2629	-0.0770	-0.1828	-0.4151
Std. Err.	0.1021	0.3114	0.1131	0.1551	0.2034	0.2221	0.1403	0.1646	0.2418	0.2011	0.2954	0.1800	0.0531
Distance	-0.8172	-0.9452	-0.7322	-1.1932	-1.5343	-1.0780	-1.5562	-1.3813	-1.3860	-1.2711	-1.1309	-1.0466	-0.9579
Std. Err.	0.1641	0.4075	0.1769	0.1848	0.2092	0.2756	0.1641	0.2128	0.2470	0.2389	0.3893	0.2189	0.0799
Export tax	-73.4414	(dropped)	-1.8681	(dropped)	-6.3500								
Std. Err.	72.1876		2.4311										2.4268
Import tax	1.0450	-8.1781	0.8361	-1.7103	-8.7356	-0.0368	-0.6587	0.7004	-6.2846	1.5588	6.9814	2.0717	-1.6582
Std. Err.	0.6678	15.4532	0.4767	1.5606	3.8719	4.8488	2.3489	5.9419	4.9920	6.6559	17.8465	2.8108	0.3507
Constant	-25.8231	-25.6847	26.7394	-38.5226	-32.5029	-31.5371	-39.5552	-35.2561	-35.4754	-41.4828	-54.0399	-44.2891	-28.9631
Std. Err.	2.8754	7.9127	3.1388	3.4081	4.0377	5.1273	3.1733	3.9454	4.9531	4.8405	7.2452	4.0399	1.4329
R- squared	0.3386	0.3449	0.3990	0.6493	0.8267	0.4813	0.7209	0.6891	0.7739	0.7776	0.6600	0.7178	0.3856
Number of obs.	827	227	668	317	107	202	325	205	107	109	107	202	3403
Trade increase	0%	0%	237%	267%	0%	0%	390%	0%	0%	0%	0%	384%	142%

Significant levels are: * 10%, ** 5%, *** 1%

2.6.2 The Role of Institutional Reforms

In this section I extend the analysis in the previous section to include an explanatory variable that reflects the importance of the quality of institutions to the intensity of bilateral trade flows. Previous studies suggest that the effect of improvements in institutions and transparency level could help economic development and lead to an increase in the volume of international trade. Anderson and Marcouiller (2002) and De Groot, Linders, Rietveld, and Subramanian (2003) find a positive and strong relation between the quality of institutions and countries' openness to trade as measured by bilateral trade flows. According to De Groot et al. (2003), a similar law or regulatory structure to that of the EU could increase bilateral trade between 12% and 18%. They also show that better-quality institutions and less corruption would increase trade by 17% to 27%. Lejour and de Mooij (2005) examine the importance of national institutions in Turkey by assessing the effect of corruption on trade relations and suggest that with institutional reforms and less corruption in Turkey, aggregate trade would increase by 57%.

According to the Corruption Perception Index of 2007, Egypt is ranked 105 out of 179, with a score of 2.9 out of 10 on the corruption index.¹³ Therefore institutional reform is crucial for Egypt. The Egypt-US FTA will induce reform in the Egyptian institutions since preliminary institutional reforms in Egypt are required before the FTA can be implemented. If Egypt could lower its corruption level (that is, improve the quality of its domestic institutions) to a level similar to that of Jordan or Israel,¹⁴ Egypt would benefit from this FTA. For example, if Egypt improves its Transparency International Corruption Perceptions Index (CPI) score from 2.9 to a score similar to Israel's 6.1, it will derive additional benefit from this agreement: It will increase

¹³ 1= highest corruption level, 10= lowest corruption level.

¹⁴ Israel and Jordan both have FTAs with the US.

its competitive position in the world markets by fostering an environment more attractive for investments and trade.

I re-estimate the gravity equation used in the previous section after including the CPI for the exporting and importing countries. The coefficient of each index is the systematic measure of the impact of corruption on the intensity of bilateral trade flows between countries. The exact specification of the new gravity equation is thus:

$$X_{hbi} = \alpha_i + \beta_{1i}D_{hbi}^{US} + \beta_{2i}d_{hb} + \beta_{3i}CPI_{hi} + \beta_{4i}CPI_{bi} + \gamma_{hi}Y_h + \gamma_{2i}y_h + \gamma_{3i}Y_b + \gamma_{4i}y_b + \sum_d \delta_{di}D_d + \nu_{1i}T_{hbi}^M + \nu_{2i}T_{hbi}^X + \varepsilon_{hbi}$$

in which CPI_{hi} and CPI_{bi} are the corruption indices for the exporting and importing countries respectively.

According to the results from Tables 2.4 and 2.5, institutional reforms in the exporting country appear to be more effective than those in the importing country. At the aggregate macroeconomic level, the transparency coefficient for the exporter country is positive and significant at the 1% confidence level, while the transparency coefficient for the importer country is positive but not significant. At the same time the US dummy still has a positive and significant coefficient at the 5% confidence level, and bilateral trade flows will increase by 157% of the current level in 2004. We can compare this result with the US dummy for the internal market, which leads to an increase in trade of 142%.

Table 2.4: Estimation Results of Sectoral and Macro Gravity Equations with the Transparency Index

	Sector 1	Sector 2	Sector 3	Sector 4	Sector 5	Sector 6	Sector 7	Sector 8	Sector 9	Sector 10	Sector 11	Sector 12	Macro Transparency
FTAUS dummy	0.8689	0.8478	1.268189*	1.417767*	0.4825	0.6068	1.712411**	-0.0198	1.0589	0.7616	0.5440	1.834887*	0.9503156**
Std. Err.	0.5925	1.4971	0.6109	0.7212	0.8078	1.0678	0.6117	0.7645	0.9567	0.9356	1.5161	0.7838	0.2991
Exporter Transparency	0.4743017***	-0.0120	0.9129963***	0.3048708*	0.1249	0.3458028*	0.637206***	0.6483033***	0.2664	0.2595	-0.0558	0.6841666***	0.4610315***
Std. Err.	0.1132	0.2712	0.1166	0.1281	0.1438	0.1902	0.1079	0.1367	0.1673	0.1628	0.2665	0.1397	0.0549
Importer Transparency	-0.0304	0.2503	0.0770	0.1624	0.2178	0.4628283*	0.1339	0.3368448*	0.1706	0.2659	0.1305	0.3856765**	0.0239
Std. Err.	0.1204	0.2697	0.1194	0.1317	0.1475	0.1922	0.1107	0.1411	0.1739	0.1705	0.2695	0.1411	0.0557
Exporter GDP	1.4276	1.2811	1.7554	1.5786	1.5699	1.3813	1.7799	1.7206	1.5863	1.6825	1.6524	1.9092	1.4908
Std. Err.	0.0874	0.2070	0.0905	0.0989	0.1129	0.1484	0.0851	0.1091	0.1346	0.1274	0.2114	0.1095	0.0424
Importer GDP	0.8306	1.3110	0.8285	1.3620	1.3492	1.3169	1.2743	1.4210	1.2278	1.2614	1.3331	1.1996	0.9777
Std. Err.	0.0878	0.2170	0.0922	0.1055	0.1191	0.1563	0.0915	0.1137	0.1437	0.1474	0.2213	0.1158	0.0437
Exporter GDP per capita	-1.3128	-1.3082	-2.3134	-1.2456	-0.8718	-0.9757	-1.1656	-1.7451	-0.6006	-0.3436	0.4795	-1.3110	-1.2758
Std. Err.	0.2142	0.5083	0.2236	0.2517	0.2844	0.3734	0.2145	0.2701	0.3316	0.3230	0.5287	0.2744	0.1064
Importer GDP per capita	-0.4645	-1.0121	-0.6408	-0.4858	-0.9507	-0.8723	-0.6185	-1.0371	-0.7591	-0.6645	-0.3119	-0.8183	-0.4390
Std. Err.	0.2236	0.5072	0.2289	0.2513	0.2946	0.3739	0.2182	0.2743	0.3523	0.3218	0.5650	0.2964	0.1068
Distanc	-0.9077	-1.0145	-0.9488	-1.2659	-1.5912	-1.2398	-1.6857	-1.5418	-1.4623	-1.3759	-1.1371	-1.2062	-1.0411
Std. Err.	0.1668	0.4176	0.1731	0.1868	0.2116	0.2773	0.1593	0.2047	0.2503767	0.2416	0.3968	0.2084	0.0805
Export tax	-98.1800 (dropped)		-3.9773 (dropped)	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)	(dropped)	-7.3624
Std. Err.	71.8266	2.3416											2.4056
Import tax	0.7967	-5.2898	0.5501	-1.2823	-7.4045	2.0204	-1.2384	1.3261	-5.7914	4.2194	5.7714	1.7160	-1.8089
Std. Err.	0.7069	15.7984	0.4729	1.6291	4.0222	4.9032	2.2998	5.7536	5.1098	6.9823	18.2026	2.6406	0.3540
Constant	-24.9588	-25.3566	-25.0580	-37.8156	-32.3332	-31.0133	-38.3562	-33.6585	-35.0325	-41.7264	-53.8238	-42.1061	-28.0371
Std. Err.	2.8560	7.9933	3.0147	3.4004	4.0487	5.0574	3.0311	3.7428	4.9534	4.8371	7.3628	3.8151	1.4247
R-Squared	0.3534	0.3477	0.4514	0.6566	0.8315	0.5322	0.7493	0.7253	0.7812	0.8111	0.6612	0.7540	0.3983
Observation	827	227	668	317	107	202	325	205	107	109	107	202	3403

Significant levels are: * 10%, ** 5%, *** 1%

Table 2.5: Percentage of Trade Increase with Institutional Reforms and the Coefficients of the Transparency Index

	Sector 1	Sector 2	Sector 3	Sector 4	Sector 5	Sector 6	Sector 7	Sector 8	Sector 9	Sector 10	Sector 11	Sector 12	Transparency
FTAUS Trade increase	0%	0%	255%*	313%*	0%	0%	454%**	0%	0%	0%	0%	526%*	157%***
Exporter Transparency Coefficient	0.47***	-0.01	0.91***	0.30*	0.12	0.35*	0.64***	0.65***	0.27	0.26	-0.06	0.68***	0.46***
Std. Err.	0.1132	0.2712	0.1166	0.1281	0.1438	0.1902	0.1079	0.1367	0.1673	0.1628	0.2665	0.1397	0.0549
Importer Transparency Coefficient	-0.03	0.25	0.08	0.16	0.22	0.46*	0.13	0.34*	0.17	0.27	0.13	0.39**	0.02
Std. Err.	0.1204	0.2697	0.1194	0.1317	0.1475	0.1922	0.1107	0.1411	0.1739	0.1705	0.2695	0.1411	0.0557

Significant levels are: * 10%, ** 5%, *** 1%

At the sectoral level, the largest impact of institutional reforms is for the exporter countries. This impact is not only in the food processing, textile, other manufacturing, and transport sectors but also in the agriculture, energy-intensive goods, and metal sectors. The results show that if Egypt improves its institutions, it could increase its exports, especially in the food processing, metal, and transport sectors. Egyptian exports are predicted to rise in the food processing, textile, other manufacturing, and transport sectors by 255%, 313%, 454%, and 526% respectively. Table 2.5 shows that the coefficients of the corruption indices for these sectors are high, implying a rise in the intensity of trade relations in these sectors. This would reflect the effect of an improvement in Egypt's corruption level. The coefficients of transparency index for importer countries are positive but insignificant.¹⁵ Table 2.5 also reveals that the coefficients of the corruption indices for energy-intensive goods, metals, and transport sectors are positive and significant.

2.7. Conclusion

This study provides an analysis of the prospective bilateral free trade agreement between the U.S. and Egypt. It assesses the effects of the two main elements that are associated with this agreement: easier access to US markets and the required preliminary institutional reforms in Egypt. The focus is on trade relations rather than foreign direct investments. The analysis is based on cross-sectional data for 2004 using the gravity approach, the first-ever use of the gravity approach to estimate the effects of the prospective Egypt-US FTA and also estimate these effects at the sectoral level.

¹⁵ The exporter's coefficient of the transparency index is negative but insignificant in raw materials and electronic equipment. The importer's transparency index is also negative but insignificant in the agriculture sector.

This prospective FTA between Egypt and the US has a significant and positive impact on bilateral trade flow. Egyptian exports would increase by 142% compared to 2004, with the largest potential impact in the textile, other manufacturing, and transport sectors, which would expand by 267%, 390%, and 384% respectively.

The effect of accession to the US market is less compared to the potential gains of improvements in domestic institutions in Egypt. In particular, the analysis shows that if the US were able to trigger reforms in Egypt such that Transparency International's Corruption Perceptions Index improved to a level comparable to that of Jordan or Israel, Egyptian exports could increase by 156%.

Finally, the results show that the institutional reforms for the exporting country appear to be more effective than the institutional reforms for the importing country. This indicates that in trade relations, the institutional factors that improve economic standards and lead to an improvement in the competitive position for the exporter country is more important than institutional factors that influence the financial settlements of any trade transaction. These institutional factors that affect the exporter country influence the quality, quantity, cost, and timeliness of supplying goods.

References

- Anderson, J. E. (1979). A theoretical foundation for the gravity equation. *American Economic Review*, 69, 106-16.
- Anderson, J. E., & Marcouiller, D. (2002). Insecurity and the pattern of trade: an empirical investigation. *Review of Economics and Statistics*, 84, 342-352.
- Anderson, J. E., & Wincoop, E. (2001). Gravity with gravitas: A solution to the border *puzzle*. National Bureau for Economic Research Working Paper, 8079.
- Bergstrand, J. H. (1989). The generalized gravity equation, monopolistic competition, and the factor-proportions theory in international trade. *Journal of the Review of Economics and Statistics*, 71, 143-53.
- CEPII (distance data). Retrieved from http://www.cepii.fr/distance/geo_cepii.xls
- CEPII (geographical data). Retrieved from http://www.cepii.fr/distance/geo_cepii.xls
- Deardorff, A. V. (1995). *Determinants of bilateral trade: Does gravity work in a neo-classic world?* National Bureau for Economic Research Working Paper, 5377.
- De Groot, H.L.F, Linders, G-J., Rietveld P., & Subramanian, U. (2003). The institutional determinants of bilateral trade patterns. *Kyklos*, 57, 103-123.
- DeRosa, D.A. & Gilbert, J. (2003). Quantitative estimates of the economic impacts of US bilateral free trade agreements. In J. Schott (Ed.), *Free trade agreements: US strategies and priorities*. Washington, DC: Peterson Institute for International Economics.
- Frankel, J. A. (1997). *Regional trading blocs in the world economic system*. Washington, DC: Institute for International Economics.
- Frankel, J. A., Stein, E., & Wei, S-J. (1995). Trading blocs and the Americas: The natural, the unnatural, and the super-natural. *Journal of Development Economics*, 47 (1), 61-95.
- Frankel, J. A., Stein, E., & Wei, S-J. (1996). Regional trading arrangements: Natural or supernatural? *American Economic Review*, 86 (2), 52-56.
- Galal, A., & Lawrence, R. Z. (Eds.) (1998). *Building bridges: An Egypt-U.S. free trade agreement*. Washington, DC: Brookings Institution Press.
- Galal, A., & Lawrence, R. Z. (2003, July). *Free trade agreements and U.S. policy*. ECES Working Paper 87.
- Galal, A., & Lawrence, R. Z. (2005). *Anchoring reform with a US-Egypt free trade agreement*. Washington, DC: Institute for International Economics.

- Galal, A., & Tohamy, S. (1998). Toward an Egypt-US free trade agreement: An Egyptian perspective In A. Galal & R.Z. Lawrence (Eds.), *Building bridges: An Egypt-U.S. free trade agreement*. Washington, DC: Brookings Institution Press.
- Helpman, E., & Krugman, P. (1985). *Market structure and foreign trade: Increasing returns, imperfect competition, and the international economy*. Cambridge, MA: MIT Press
- Hoekman, B., & Konan, D. E. (2001). Deep integration, nondiscrimination and Euro-Mediterranean free trade. In J. von Hagen & M. Widgren (Eds.), *Regionalism in Europe: Geometries and strategies after 2000*. Boston/Dordrecht/London: Kluwer Academic Publisher.
- Hoekman, B., & Konan, D. E. (2005). *Deepening Egypt-US trade integration: economic implications of alternative options*. Working Paper 200501, University of Hawaii at Manoa.
- Hoekman, B., Konan, D., & Maskus, K. (1998). An Egypt-US free trade agreement: Economic incentives and effects. In A. Galal & R.Z. Lawrence (Eds.), *Building bridges: An Egypt-U.S. free trade agreement*. Washington, DC: Brookings Institution Press.
- Konan, D. E., & Kim, K. (2004). Beyond border barriers: The liberalization of services trade in Tunisia and Egypt. *The World Economy*, 27 (9), 1321-1498.
- Konan, D. E., Maskus, K., & The World Bank. (2004). *Quantifying the impact of services liberalization in a developing country*. World Bank Policy Research Working Paper Series 3193.
- Koukhartchouk, O., & M. Maurel (2003). *Accession to the WTO and EU enlargement: what potential for trade increase?* CEPR Discussion paper 3944.
- Krugman, P. (1995). *Growing world trade: Causes and consequences*. Brookings Papers on Economic Activity 1, 327-377.
- Lawrence, R.Z. (1996). *Regionalism, multilateralism, and deeper integration*. Washington, D.C., The Brookings Institution.
- Lawrence, R.Z. (1998). Is it time for a US-Egypt free trade agreement? A US perspective. In A. Galal & R.Z. Lawrence (Eds.), *Building bridges: An Egypt-U.S. free trade agreement*. Washington, DC: Brookings Institution Press.
- Lejour, A. M., & de Mooij, R. A. (2005). Turkish delight: Does Turkey's accession to the EU bring economic benefits? *Kyklos*, 58 (1), 87-120.
- Lejour, A. M., de Mooij, R.A., & Nahuis, R. (2001). *EU enlargement: Economic implications for countries and industries*. CPB Document 011.

- Philipidis, G., & Sanjuan, A. I. (2006). An examination of Morocco's trade options with the EU. *Journal of African Economics*, 16, 259-300.
- Poyhonen, P. (1963). A tentative model for the volume of trade between countries. *Weltwirtschaftliches Archiv*, 90, 93-99.
- Schott, J.J. (Ed.) (2004). *Free trade agreements: US strategies and priorities*. Washington, DC: Peterson Institute for International Economics.
- Tinbergen, J. (1962). *Shaping the world economy: Suggestions for an international economic policy*. New York: The Twentieth Century Fund.
- Transparency International. (2004) Corruption perceptions index. Retrieved from http://www.transparency.org/policy_research/surveys_indices/cpi/2005
- The World Bank (2009). World development indicators (WDI). Retrieved from <http://ddp-ext.worldbank.org/ext/DDPQQ/member.do?method=getMembers&userid=1&queryId=1>

3. The Potential Impact of the Free Trade Agreement between Egypt and the US on Inward Foreign Direct Investment to Egypt

3.1. Introduction and Motivation

In recent years, there have been two important developments in the world economy: the extraordinary surge in the number of Preferential Trade Agreements (PTAs) signed in the last decade and the increased importance of Foreign Direct Investment (FDI) around the world.

Over the past two decades, PTAs have changed significantly to involve more countries, developed and developing, in reciprocal trade agreements. Current PTAs are motivated by the desire to enhance trade and facilitate international investment and the operations of multinational firms. This type of PTA is called a deep trade agreement. Deep agreement (or integration) refers to the possibility of harmonizing economic policies among member countries for closer economic relations. The objective of these agreements is not limited to the elimination of administrative and regulatory barriers (shallow agreements) but is rather to expand the agreement to policies affecting international trade and foreign investment within member countries. Barriers to trade and investment take many forms, including customs procedures, product standards and certification systems, qualified licensing systems, intellectual property rights (IPR) enforcement, and FDI policies. The European Union (EU) and the North American Free Trade Agreement (NAFTA) are examples of deep agreements. These types of PTAs are expected to increase

FDI.¹⁶ In order for developing countries to attract FDI and enhance exports, they need to establish their credibility by improving their institutions and domestic regulatory systems.

Egypt currently has a Trade and Investment Framework Agreement (TIFA) with the United States (US). Efforts to negotiate a Free Trade Agreement (FTA) with the US started in the late 1990s and ended with the signing of the TIFA in 1999. The aim of this agreement is to help Egypt develop its institutions and rules of commerce, integrate itself into the global economy, and foster the development of bilateral investment treaties and comprehensive FTAs. Since the 1990s, there has been progress in the economic integration between Egypt and the US. For instance, Egypt has made significant reforms in tariff and tax structure and has also made efforts to improve its economic standards, rules, and regulations. In December 2004, Egypt renewed its commitment to the FTA with the US by signing the Qualified Industrial Zone (QIZ) agreement.

Despite reforms in the Egyptian economy and progress in the economic relationship between Egypt and the United States, neither country seems to be willing to fully accept this FTA. This could be the result of difficulties associated with this agreement, namely a potential conflict of interest for Egypt and its trading partners, notably the EU. The close relations between Egypt and the US might also raise political conflicts in the region, given the situations in Iraq and Palestine. Finally, Egypt must engage in necessary economic and political reform since the proposed FTA includes political clauses that guarantee democracy, the rule of law, human rights, and respect for and protection of minorities.

However, this FTA is important for both countries. While Egypt's record in attracting FDI has been positive over the past decades, its reform process is far from complete.¹⁷ The

¹⁶ The term "Preferential Trade Agreement" (PTA) refers to a regional trade agreement (RTA) or regional arrangement between two or more countries (including Free Trade Agreements [FTA]).

increase in FDI indicates that foreign investors are aware of the reforms that have been undertaken. Therefore if the Egypt-US FTA is structured as a deep agreement, it could stimulate further reforms and increase FDI to Egypt from the US and elsewhere. The agreement would guarantee access to the large US market and increase exports and investments by both foreign and local investors. Egypt needs this agreement with the US to reduce trade and investment diversion associated with the EU agreement and avoid a growing disadvantage with the US's other trading partners that might benefit from PTAs.¹⁸

For the US, there is a need to develop its economic relationship with Egypt so as to match the political relationship that the two countries already share; this FTA will advance the Obama administration's new policy in the Middle East.¹⁹ A deep agreement eliminates other barriers that US firms may face in Egypt and offers better access to the Egyptian markets. This also would prevent Egypt from becoming exclusively oriented towards European markets; in fact, Egypt's economic standards have become more and more EU-oriented. Finally, it is in the US's best interest to reduce the trade and investment diversion effects of the Arab League and the Euro-Mediterranean agreement.

The trade effects of PTAs have received extensive attention in the theoretical and empirical literature. However, the empirical evidence on the investment side of PTAs is limited. Only a few empirical studies have investigated the impact of PTAs on investment flows, and even fewer have focused on the impact of deep agreement provisions in PTAs. This knowledge gap is significant because of the potential importance of FDI in PTA negotiations. Furthermore, the potential of greater FDI flows has become an important motivating factor in the pursuit of

¹⁷ Reforms implemented since the Nazif government came to power in 2004 improved the overall investment structure.

¹⁸ The Euro-Med Agreements limit their commitments to those of the General Agreement on Trade in Services GATS (shallow agreements), which is not the right signal to send to foreign investors.

¹⁹ As the largest market in the region, Egypt is a cornerstone for any successful regional free trade area.

PTAs. Accordingly, this paper provides quantitative points of reference for discussions of the economic impacts of this prospective trade agreement.

This paper focuses on the impacts of this prospective FTA on Egypt's economy in terms of both costs and benefits. It will examine the extent to which the preferential trade agreements would lead to an expansion of FDI into Egypt as a host country as well as the potential effect of the deep integration provisions that are usually included in the US trade agreements on FDI flows to Egypt from the US and the rest of the world.

In a North-South PTA setting, I estimate the potential FDI flows to Egypt that would result from the implementation of this prospective FTA, using a gravity model with five dummy variables to quantify the direct as well as the indirect effects of this FTA. The direct effect of a PTA on FDI flows, as used in the literature, is the expansion of FDI into the host countries as a result of having a deep FTA with the US. The indirect effect reflects the changes in FDI flows with countries that are not a direct party to the FTA agreement. In order to separate the effect of deep integration provisions on FDI, I create an index of the extensiveness of deep integration provisions that exist in the US trade agreements and then use that index in a gravity model and apply it to Egypt's FDI flows for the year 2005.

The rest of this paper is organized as follows. Section 2 is a review of deep integration, the theory of preferential liberalization and FDI, and some empirical evidence. Section 3 is a brief survey of the gravity approach to investment. Section 4 involves the empirical analysis including data, empirical strategy, and estimation results. Finally, section 5 concludes.

3.2. Literature Review

A preferential trade agreement is a broad type of trade arrangement between two or more countries, where member countries impose lower tariffs on imports from each other than on

imports from the outside world. Preferential trade agreements include free trade areas, customs unions, common markets, and economic unions. An FTA is a PTA with zero tariffs on trade among its members and in which member countries set their external tariffs independently, while a Customs Union (CU) is a FTA with a Common External Tariff (CET) for all members. A Common Market is a CU that includes elimination of barriers to labor and capital flows across the members of the market. The US-Egypt agreement discussed here would be an FTA.

3.2.1. Deep Integration

Deep integration refers to the possibility of harmonizing economic policies among member countries for closer economic relations. The objective of these agreements is to eliminate administrative and regulatory barriers in order to expand international trade and foreign investment within member countries. These barriers take many forms, including customs procedures, product standards and certification systems, qualified licensing systems, intellectual property rights enforcement, and foreign direct investment (FDI) policies. In addition, if the integration is among less developed countries, deep integration could include some provisions to improve insufficient or outdated infrastructure.

Deep integration is an essential characteristic of many new regional agreements. The European Union and the North American Free Trade Agreement are recent regional arrangements that are not traditional but rather deep agreements in their movement beyond the removal of tariffs and quotas. For instance, the EU intensified its relationships under the single European Act and the Maastricht Treaty, planning for full economic and monetary union for its members, whereas NAFTA establishes free movement for capital and includes provisions for international cooperation as well as side agreements on labor standards and environment.

From traditional (shallow) to deep regional integration. Deeper integration does not necessarily imply a more efficient agreement: The result depends on the policies that are harmonized and the countries that apply it. For example, a deep agreement that imposes measures that are unsustainable for one country's level of development reduces its economic efficiency. In contrast, a deep agreement that puts in place measures to enhance efficiency and improve domestic institutions is a better agreement. Moreover, the outcome depends on the commitment of the partner countries to the World Trade Organization (WTO) system and how much progress the countries make in parallel to the WTO agenda (Schott, 2004).

Over the past two decades regionalism has changed significantly to involve more countries, developed and developing, in reciprocal trade agreements. Current regional agreements are motivated by the desire to enhance trade and facilitate international investment and the operations of multinational firms. The EU and NAFTA are examples of these current regional arrangements.

The specialization of current regional agreements corresponds to the need for larger markets, the ability to operate abroad, and FDI in goods and services. Market access becomes crucial for success with globalization. Large international markets are important not only for trade but also for economies of scale. It is important for developing countries to attract foreign investment and enhance exports in order to increase their ability to compete in large markets; they must also recognize the effects of investment and trade barriers. In order to attract FDI and enhance their exports, these developing countries need to establish their credibility by improving their institutions and domestic regulatory systems. For developed countries, the ability of firms to operate abroad raises issues such as the effects of domestic regulations, taxes, intellectual property rights, and technical standards. These aspects are relatively important in that they

determine the conditions that firms will operate under abroad. These features require deeper forms of regional integration that go beyond the removal of border barriers to establish common rules and institutions at supranational levels.

While there has been a growing interest in the determinants of FDI in developing countries, few studies have attempted to examine the effects of deep agreement provisions (including investment provisions) or the effects of investment-provisions found in many PTAs.²⁰ Accordingly, much of the previous work on trade and investment in PTAs has focused on either the description of the provisions found in trade agreements (UNCTAD, 2004a; Leshner & Miroudot, 2006) or the econometric analysis of determinants of FDI in which PTAs are included as a dummy variable (e.g., World Bank, 2005; te Velde and Bezemer, 2004).

3.2.2 The Theory of Preferential Liberalization and FDI

Over the past decade, the theoretical and empirical literature on PTAs and FDI appears to show that PTAs lead to more FDI. Economists have taken two different approaches to explaining the effects of PTAs on FDI: the direct effects of investment provisions that are included in deep PTAs and the indirect effects of changes in trade flows, improvements in the investment climate, market expansion, and growth effects. An example of the second approach is the study by Blomström and Kokko (1997), who argue that PTA leads to efficiency gains and higher growth and thus increased FDI. The focus of this paper is on the direct effects of investment provisions and investment climate as the main characteristics of deep agreements.²¹

The direct effect of a PTA on FDI flows is the expansion of FDI into the host countries as a result of including specific investment provisions in this agreement. According to te Velde and Bezemer (2004), investment provisions refer to the administration of cross-border investment

²⁰ According to UNCTAD (2004b), FDI represents a very large share of capital formation in developing countries.

²¹ This characterization and the discussion below follow Medvedev (2006).

among the PTA member countries. They include the removal of investment barriers (such as regulatory and legal barriers to international capital flows) and the operation of foreign investors in domestic firms and financial markets. In addition to the direct effect of a PTA on FDI flows, investment provisions have an indirect effect through the rules on the treatment and protection of FDI, which leads to better investment climate.

Several studies examine investment provisions in PTAs and their expected effects on FDI flows.²² According to Medvedev (2006), in general, including investment provisions in PTAs is likely to generate more FDI inflows to the host country, but the magnitude of the impact depends on the strength of the provisions, the sectors they include, and the speed and efficiency of applying these provisions. He also points out the need for complementary policies to improve the overall investment climate.

FDI regulations have become more common in recent agreements, yet most of the existing PTAs still do not contain any explicit investment provisions. Furthermore, the majority of these PTAs do not include specific commitments, i.e. defined timelines for the completion of these provisions. However, many US and EU free trade agreements are exceptions to this rule.

In addition to the direct effect of PTAs on FDI flows, PTAs that take the form of deep agreements usually cover other provisions that are more likely to improve the host country's investment climate, which in turn increases its FDI. The features of deep integration include harmonizing economic policies among member countries for closer economic relations and eliminating administrative and regulatory barriers to expand international trade on goods, services, and foreign investment within member countries. These barriers take many forms, including customs procedures, competition, product standards and certification systems, qualified licensing systems, dispute settlement, and intellectual property rights enforcement.

²²See UNCTAD, 2003.

The link between FDI and some other deep agreement provisions, such as clear procedures for dispute settlement and intellectual property right protection, is debatable.²³ Theoretically it is likely to encourage foreign investors and consequently increase FDI. However, some empirical studies such as that of Maskus (2000) cannot establish a relationship between measures of intellectual property rights protection and the distribution of FDI. Furthermore, there are two views associated with examining the effects of other provisions such as mutual recognition of product standards and enforcement of competition rules. These provisions represent non-tariff barriers (NTBs) to trade; therefore the removal of these barriers could encourage multinational enterprises (MNEs) to export rather than invest in domestic markets. At the same time, the removal of these barriers expands the market for the host country's goods, which can be an incentive for MNEs to invest in the country. Therefore these provisions could increase or decrease FDI.

However, if a particular agreement does not go far in terms of deep integration, participation in an agreement per se is likely to improve investor's confidence in partner countries. Partner countries' commitment to reforms could be a signal for investors of existing reforms and open investment policy, which in turn improves investor's confidence in these partner countries. Krueger (1999) describes PTAs as "building blocks" toward global free trade in this case. Burfisher, Robinson, and Thierfelder (2001) support this hypothesis: The authors argue that one of the major impacts of NAFTA agreements on Mexico during the peso crisis was its commitment to reforms and an open policy approach, which helped in increasing investor confidence. Dee and Gali (2003) also suggest that PTA membership is a way of signaling reform and will bring a strong net investment creation effect of the non-trade provisions of PTAs.

²³ These aspects are major factors in attracting multinational corporations.

This paper tests the hypothesis that PTAs increase investor confidence by estimating the aggregate effect of the Egypt-US PTA. This aggregate effect includes both the direct and the indirect effects to determine whether this prospective PTA with the US would be a way of signaling reform and thereby bringing a strong positive indirect effect on the inward FDI to Egypt.²⁴

3.2.3 Preferential Liberalization and FDI-Empirical Evidence

Since trade and investment flows are determined by many of the same factors, scholars have begun to apply the gravity model to investment flows between countries in the PTA context. A few studies have investigated the impact of PTAs on trade and investment flows, and even fewer have focused on the impact of investment provisions in PTAs. Levy, Stein, and Daude (2003) address the importance of PTAs for bilateral FDI at a basic level, using dummies for regions and an Organization for Economic Cooperation and Development (OECD) database that covers 20 source and 60 host countries (which excludes many developing countries). The results confirm a positive relationship between membership in the same PTA and FDI. Common membership in a PTA increases bilateral stocks of FDI by an average of about 27 percent. This work is useful in determining the importance of PTAs for bilateral FDI, but it does not deal with the net effect on a country's FDI position. The issue of net investment creation and/or diversion has been addressed by Adams, Dee, Gali, and McGuire (2003): the authors include three separate PTA variables to account for intra-PTA FDI creation and extra-PTA FDI diversion, both from PTA members to outsiders and from non-member countries to PTA partners. They find six of the nine sample PTAs (including the EU) to be investment-creating, one investment-diverting, and two to have no significant impact. Furthermore, they construct an index of liberalization for each PTA, the "Member Liberalization Index", which categorizes investment provisions that are

²⁴ More discussion of this point will appear in the section on the role of US FTAs.

associated with deep agreements.²⁵ The index's categories have various weights: the category indicates whether a PTA includes provisions prohibiting restrictions on investment, national treatment for investment, initiatives to reduce restrictions and facilitate investment, or no provisions. Adams et al. (2003) use the index in a version of the gravity model with a better dataset that includes developed and developing countries and find that deep integration provisions have a major impact on FDI. However, while this study is useful in determining the net FDI effects of a specific PTA, it cannot establish the impact of a particular PTA on the net FDI position of a particular country.²⁶

Another study by te Velde and Bezemer (2004) uses a similar index that includes four different categories of investment provisions: where there are no provisions, where there are some investment provisions in the PTA, where the agreement includes advanced investment provisions, where the agreement includes complete investment provisions, and where there are more restrictive provisions on foreign investors. The authors not only find a positive relationship between membership in a regional agreement and regional FDI inflows but also show the importance of the regional provisions category.

3.3. Gravity Model

Gravity modeling is an empirical approach that has been applied in cross-country analyses of bilateral international trade flows. Tinbergen (1962) and Poyhonen (1963) are the first scholars to apply the gravity model to analyze international trade flows. The gravity model has thereafter been applied successfully in a variety of contexts and become a popular tool in the empirical analysis of international trade. The widespread use of gravity models in the study of international trade could be explained in part as a result of increasing interest in economic

²⁵ Some refer to the provisions of deep trade agreements as “new” trade provisions or provisions of “third wave” trade agreements. These provisions mainly cover investment and trade in services.

²⁶ Since the study includes a sample of nine PTAs.

geography. The research in this area has evolved at both the theoretical and empirical level. Since the second half of the 1970s, several theoretical researchers such as Anderson (1979) and Helpman and Krugman (1985) have supported the use of the gravity model.

Although the theoretical foundation of the gravity equation for bilateral FDI is much less clearly established than it is for bilateral trade, it is still possible to use gravity models in the analysis of FDI. The gravity equation's core variables are market size and geographic or economic distance. These core variables can be important determinants of FDI as well. Current theoretical approaches to explain FDI support this view in principle, assuming that country size (or market size in the case of FDI analysis) and distances are important determinants of FDI. As for trade flows, Gross Domestic Product (GDP) terms are proxies for supply and demand forces, and the distance term is intended to account for various transaction costs in the bilateral investment (Bénassy-Quéré, Coupet, & Mayer, 2005).

3.4. Empirical Analysis

3.4.1 Data Description and Model Setup

In this paper, I am using a gravity model of investment: the standard FDI model with standard explanatory variables and including an additional variable measuring the extensiveness of the deep integration provisions to analyze the bilateral flows of FDI from 20 OECD source countries to 49 host countries for the year 2005. The data is complete and available for 49 host countries and includes developed, developing, and transition economies, providing a fair representation of the whole world (see Table 3.1).²⁷ However, since this paper focuses on the impacts of the prospective FTA between Egypt and the US on Egypt's inward FDI, and considering data limitations, the estimated relationship in this study is driven by North-South

²⁷ The number of host countries is constrained by the availability of data on FDI for the US and its partners in the different PTAs.

PTAs.²⁸ This study includes 13 North-South PTAs: 8 US PTAs, 3 EU PTAs, and 2 other PTAs (see Table 3.2).

Table 3.1: Countries of Origin and Countries of Destination

Countries of origin			
Austria	France	Korea	Poland
Canada	Germany	Luxemburg	Switzerland
Czech Republic	Hungary	Netherlands	Turkey
Denmark	Italy	New Zealand	United Kingdom
Finland	Japan	Norway	United States
Countries of destination			
Argentina	France	Malaysia	Slovakia
Australia	Germany	Mexico	Slovenia
Austria	Greece	Morocco	South Africa
Brazil	Hong Kong, China	Netherlands	Spain
Bulgaria	Hungary	New Zealand	Sweden
Canada	India	Norway	Switzerland
Chile	Indonesia	Philippines	Taiwan, China
China	Ireland	Poland	Thailand
Colombia	Israel	Portugal	Turkey
Czech Republic	Italy	Romania	Ukraine
Denmark	Japan	Russia	United Kingdom
Egypt	Korea	Singapore	United States
Finland			

I am including a new index that quantifies the extensiveness of deep integration provisions in each PTA included in this study to assess its potential impact on inward FDI to Egypt. There are seven deep integration provisions: investment, services, standards, competition, customs cooperation, IPR, and dispute settlement (see Table 3.2).²⁹ The extensiveness of the deep agreement provisions index is the average number of deep integration provisions included in the PTA.³⁰

²⁸ The US and the EU have been important drivers of the North-South agreements.

²⁹ Most recent agreements include some, most, or all these provisions.

³⁰ It is not appropriate to analyze these provisions individually because they are highly correlated.

Table 3.2: "Deep integration" provisions of various North-South PTAs

	Investment	Services	Standards	Competition	Customs cooperation	IRP	Dispute settlement
US-Jordan	Yes	Yes	No	Yes	Yes	Yes	Yes
US-Chile	Yes	Yes	Yes	Yes	Yes	Yes	Yes
US-Singapore	Yes	Yes	Yes	Yes	Yes	Yes	Yes
US-Australia	Yes	Yes	Yes	Yes	Yes	Yes	Yes
US-CAFTA	Yes	Yes	Yes	No	Yes	Yes	Yes
US-Morocco	Yes	Yes	Yes	No	Yes	Yes	Yes
NAFTA	Yes	Yes	Yes	Yes	Yes	Yes	Yes
EU-South Africa	No	No	No	Yes	No	Yes	Yes
EU-Mexico	Yes	Yes	Yes*	Yes	Yes*	Yes	Yes
EU-Chile	Yes	Yes	Yes*	Yes	Yes	Yes	Yes
EU-Med	No	No	No	Yes*	No	Yes	Yes
Japan-Singapore	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Canada-Chile	Yes	Yes	No	Yes	Yes	No	Yes

(*) denotes areas where implementation steps are to be agreed on at a later date.

The data are collected from different sources: the value for the outward stock of FDI data is compiled from OECD International Direct Investment. The main independent variable, a dummy for the presence of FTA data, is collected from WTO (2008); the US FTA dummy variable data is collected from the Office of the United States Trade Representative (USTR). GDP of the source and host countries as an indicator of the size of the market, GDP per capita as an indicator of potential consumption in the host country, and taxes on international trade are collected from World Development Indicators (WDI). I provide the calculations of the difference in openness between the two countries derived from the size of imports and exports with respect to GDP and include Transparency International's Corruption Perception Index (CPI) as an indicator of the institutional climate of the source and host countries. The coefficient of each index is the systematic measure of the impact of corruption on the intensity of FDI flows between countries. I also include the Composite Country Risk Index (CRI) compiled by the PRS Group as an indicator of political climate. Finally, for bilateral distance data and common

dummy variables used in gravity equations, I use data from the Centre D'Études Prospectives et d'Informations Internationales (CEPII).

In this paper, I use the stock and not the flow of FDI as a dependent variable for the following reasons: first, the data for the stock of FDI is more widely available than the data for the flows. Second, prior statistical tests suggest that a gravity model based on outward stock is preferable to a gravity model based on flows (Dee & Gali, 2003). Finally, using the stock of FDI allows the estimation of the stock of outward investment and stock of inward investment effects separately. Also, I use the log of FDI in the analysis to render the distributions nearly normal along with the error term homoscedastic. Furthermore, in order to address the problem caused by observations of the dependent variable taking a value of zero, the dependent variable in this study is $\ln(1+FDI)$.³¹

The base model. The base model checks whether the gravity model fits Egypt's geographical patterns of investment. It tests the effects on bilateral FDI flows of GDP, GDP per capita, distance, and various geographical and cultural factors such as whether the two countries share a border, a common official language, and/or a colonial past.

I estimate the gravity equation with an Ordinary Least Squares (OLS) estimation where the natural log of all real variables is utilized. Therefore the interaction between the independent variables and the dependent variable in the equation is presented in percentages, i.e. how much a percentage change in one of the variables affects the dependent variable. The exact specification of the base gravity equation is

$$FDI_{ij} = \alpha + \beta_1 GDP_i + \beta_2 GDPpc_i + \beta_3 GDP_j + \beta_4 GDPpc_j + \beta_5 d_{ij} + \beta_6 D_d + \varepsilon_{ij}$$

³¹ By taking logs, these observations would be dropped, creating a potential selection bias problem. For more discussion of this issue, see Stein and Daude (2001).

where FDI_{ij} stands for the stock of outward FDI from source country i to host country j . GDP is per capita GDP of the source and host countries, and d stands for the distance between the capitals of the countries i and j .³² D_d is a set of dummies indicating whether the two countries are contiguous (contig), have ever had a colonial link (colony), have had a colonial relationship after 1945 (col45), or share a common language. There are two common language dummies: whether the two countries share a common official language (comlang_off) and whether a language is spoken by at least 9% of the population in both countries (comlang_ethno).

According to the theory, while one expects FDI to be a positive function of GDP and cultural factors, the expected coefficient of distance and GDP per capita is ambiguous. While it is clear that distance reduces trade such that the distance coefficient is negative, in the case of FDI distance could reduce or enhance FDI, i.e. the distance coefficient could be negative or positive. It could reduce FDI as a result of increasing coordination and other transaction costs that usually increase with distance, but it could enhance FDI if there are advantages such as overcoming investment barriers by domestic producers or avoiding transportation costs. Therefore if distance appears as either negative insignificant or positive significant, this could be a result of a positive effect on some investors and a negative effect on others. For GDP per capita, the impact on FDI flows is also theoretically ambiguous because high GDP per capita reflects both high purchasing powers of consumers as well as high real wages. However, empirical studies generally show GDP per capita to have a positive, although not always significant, impact on inward FDI.

Results from the base model. Table 3.3 reports the estimation results of the base model. According to these estimates, the coefficients of GDP and GDP per capita are positive and

³² Distances are calculated following the great circle formula.

significant. The magnitude of these variables is higher for the source country than for the host country: a 1% increase in the GDP of source and host countries increases outward FDI by 0.22% and 0.06% respectively. The coefficient of distance is positive and significant. The results indicate that a 1% increase in the bilateral distance increases FDI flows by 8%. Furthermore, I include in the model variables that account for shared historical, political, and cultural background. Sharing a language or a colonial history supports bilateral investment. The border variable's coefficient is negative but insignificant. This is not surprising as the literature suggests that the border variable is often highly correlated with some of the other gravity dummy variables.

Overall, the effects of independent variables are both statistically and economically significant and support prior evidence from the literature. Thus the gravity equation seems to successfully explain why international investment varies across nations.

Table 3.3: Summary of regression results of the Base Model

	Coeff	Std. Err.
GDP_i	.2201***	0.0192
GDP-j	.0575***	0.0128
GDPpc-i	.1122*	0.0637
GDPpc-J	.0944**	0.0321
Dist	.0762**	0.0264
contig	-0.1293	0.1348
comlang_off	-0.0574	0.1345
comlang_ethno	.3168*	0.1231
colony	.3707*	0.1594
col45	-0.5492*	0.2566
Constant	-9.4734***	0.9613
Number of obs.	1187	
R Squared	0.1666	

Significant levels are: * 10%, ** 5%, *** 1%

3.4.2 The Role of the US FTA³³

In this section, I estimate the potential inward FDI to Egypt with the US PTA, assuming it to be a type of deep agreement.³⁴ The quantitative analysis in this section relies upon two gravity models. In model 1, I add five PTA dummy variables to capture the aggregate effects of US PTA on inward FDI to countries entering such agreements with the US. Then, in model 2, I create an index of the extensiveness of deep integration provisions that exist in the US trade agreements in order to separate the effects of deep integration provisions on FDI, and then use that index in the gravity model.

This paper assumes that this prospective PTA takes the model of deep agreement to guarantee the inclusion of investment provisions that should, theoretically, positively impact both intra-bloc (the provisions are applicable to foreign firms established in one of the PTA member countries) and extra-bloc investments. However, there are four factors that could create uncertainty around the expected positive impact of this agreement. The first factor is that Egypt already has several PTAs. The second one is that Egypt receives its FDI from eight countries, including the US and five European countries; the third factor is that Egypt and many other countries in the region seem to follow a loose investment model that evolves over time (Leshner & Miroudot, 2006). The fourth is that US PTAs are more extensive than EU PTAs in terms of their provisions. For example, provisions for recognition and acceptance of similarity of standards are strongest in US PTAs, and the treatment of investment and capital flows in US agreements tends to be more extensive than in EU agreements. Most PTAs do not go beyond the substantive provisions of the WTO with regard to the coverage of IPR, with the exception of US agreements. Finally, US PTAs are the most extensive in terms of dispute settlement.

³³ I will start using the term PTA for FTA. A Free Trade Area (FTA) is a PTA with zero tariffs on trade among its members and where member countries set their external tariffs independently.

³⁴ Note that the US PTAs in the sample are deep agreements.

Accordingly, there is a need to consider all of these factors, along with their direct and indirect effects, since they could affect the outcome of this agreement. This study considers these factors and suggests a comprehensive analysis that includes a measure of the expected external effects of this PTA.

Empirically, this method represents a departure from the literature in the sense that it adds the condition that the PTA must be a deep agreement (most studies include a dummy variable that indicates whether a PTA exists between the country pair or not). Also, this method uses a dummy variable indicating whether the country pairs in the dataset participate in a PTA with the US (as a deep agreement) to capture the “external effects” of the PTA. It is visible that the exact specifications of US agreements are reasonably uniform. Intuitively, the same analysis can be applied to the intra-PTA FDI effects in the case of an existing PTA with the US. Furthermore, I include six dummy variables in one regression (most studies include three dummy variables to quantify the net effect of a PTA). These dummy variables help determine, at the most general level, the aggregate impacts of the US PTAs that contain deep integration provisions on FDI.

3.4.3 Model 1

I expand the gravity equation with a number of variables associated with the effects of PTAs on FDI that are discussed in the literature. I try different specifications, changing the sets of independent variables to check the robustness of the result. Accordingly, the independent variables in this study include exports for source and host countries and taxes on international trade. A clear hypothesis is that higher taxes discourage FDI, but the effect of taxes on FDI can vary substantially by the type of taxes, measurement of FDI activity, and tax treatment in the host and source countries (de Mooij & Ederveen, 2003). Independent variables also include difference in openness as a measure for the difference in international orientation of the

countries, which is calculated as the difference between the two countries' total imports and exports as a percentage of GDP. Finally, I include the composite country risk index and Transparency International's Corruption Perceptions Index as indicators of the institutional and political climate. The exact specification of the gravity equation is

$$\begin{aligned}
 FDI_{ij} = & \alpha + \beta_1 D^{US} + \beta_2 D^{N-N} + \beta_3 GDP_i + \beta_4 GDPpc_i + \beta_5 GDP_j + \beta_6 GDPpc_j + \beta_7 d_{ij} \\
 & + \beta_8 D_d + \beta_9 EXP_i + \beta_{10} EXP_j + \beta_{11} T_i + \beta_{12} T_j + \beta_{13} DIFOPP + \beta_{14} CRI_i + \beta_{15} CRI_j \\
 & + \beta_{16} CPI_i + \beta_{17} CPI_j + \varepsilon_{ij}
 \end{aligned}$$

where D^{US} is a set of PTAs dummy variables that equals unity if a particular US PTA exists between the country pair and zero otherwise. In particular, I add five US PTA dummy variables to capture the potential direct and indirect effects of this PTA on FDI: two to capture direct effects and three to capture indirect effects. The direct effects refer to the increase or decrease in FDI as a result of a deep PTA with the US, i.e. including a dummy variable that equals unity if the country pair is, for example, the US and Chile. The direct effects also refer to the increase or decrease in FDI as a result of a shallow agreement (an agreement with any country in the dataset but not the US): including a dummy variable that equals unity if the country pair is, for example, the EU and South Africa.

Three dummy variables are created to capture potential indirect effects. However, these are not the conventionally defined indirect effects such as changes in trade flows, improvements in the investment climate, market expansion, or growth effects but rather the aggregate effect of external effects of PTA on FDI and extra-PTA FDI effects. The first dummy variable, both, indicates whether the country pairs in the dataset participate in a PTA with the US: this dummy variable equals unity if the country pair is, for example, Canada and Mexico or Japan and

Chile.³⁵ The second dummy variable, *source*, indicates that the source country participates in a PTA with the US but not the host country, for example, Canada and Egypt. Finally, the third dummy variable, *host*, indicates that the host country participates in a PTA with the US but not the source country, for example, Austria and Canada.

In this study, there is a need to distinguish between North-South and North-North PTAs, especially with the use of the OECD outward FDI data (which means that most of the source countries are North countries).³⁶ Therefore the equation includes a dummy variable called North-North or D^{N-N} , a dummy variable that equals unity if the country pair is considered to be North, for example, Germany and France. This dummy variable should control the effects of North-North PTAs on the sign and magnitude of North-South PTAs (the variables that are of interest in the study). A country is designated as North (or high income) if it had a GNI per capita of \$10,066 or more in 2004 (World Bank, 2006); otherwise it is designated as South. To continue with the equation, *EXP* is the export of goods and services, *T* is the taxes on international trade as a percentage of revenue, *DIFOPP* is the difference in openness between the two countries, *CRI* is the composite risk index, and finally, *CPI* is Transparency International's Corruption Perceptions Index.

The predicted percentage change in inward FDI to Egypt is calculated, and then the weighted process is used to calculate the aggregate predicted dollar changes. The predicted percentage change is equal to the difference in FDI in the pre- and post-PTA. When Egypt signs a PTA with the US, its relationship with all other countries will be affected as follows: first, if neither country had a PTA with the US before but now the host country has a PTA with the US, the predicted percentage change is equal to the percentage changes associated with the

³⁵ Japan and Chile participate in two different PTAs with the US: Japan-US in CAFTA and US-Chile FTA

³⁶ For the same reason there is no need to analyze the effects of South-South PTAs.

coefficient of the PTA_host dummy variable.³⁷ Second, if the source country had a PTA with the US before and now both have a PTA with the US, the predicted percentage change is equal to the difference between the percentages change associated with the coefficients of the both and source dummy variables. The aggregate predicted dollar change on inward FDI to Egypt is the weighted average of these percentage changes using initial FDI levels as the weights.

Results. One would expect that the relationships among the variables in the base model would continue to hold. The results in Table 3.4 support this expectation: GDP, distance, border, language, and colonial relationships continue to interact with investment flows in the same way. However, it is important to point out that the estimate of GDP per capita of the host country is negative and significant. This could be due to the high correlation (0.72) between GDP per capita and the institutional indicator.

³⁷ “Neither” is the case in which neither one of the country pair is participating in an agreement; therefore “neither” always takes the value of zero.

Table 3.4: Summary of regression results for the US PTA
Model 1 / US Dummy

	Coeff	Std. Err.
GDP _i	0.0291	0.1433
GDP _j	-0.1209**	0.0450
GDPpc _i	-2.7344***	0.3918
GDPpc _J	0.0780	0.0878
Dist	0.3412***	0.0634
contig	0.4962*	0.1931
comlang_off	-0.6338**	0.2178
comlang_ethno	0.7209***	0.1850
colony	0.1191	0.2705
col45	0.4605	0.5337
Exp _i	0.9110***	0.1698
Exp _j	0.2018***	0.0554
Tax _i	-0.3454**	0.1298
Tax _j	0.0075	0.0067
Diff in openness	-0.0013*	0.0007
cri _i	0.0963***	0.0163
cri _j	0.0210*	0.0109
CPI _i	0.1344**	0.0445
CPI _j	-0.0745*	0.0354
PTA _{N/N}	0.0879	0.1168
PTA deep	-0.0973	0.3166
PTA shallow	0.1524	0.1554
PTA both	1.1736**	0.3522
PTA source	0.4634*	0.2295
PTA host	-0.5262***	0.1345
Constant	-11.0293***	2.3925
Number of obs.	371	
R Squared	0.4256	0.5263

Notes:

1- *i* for host country and *j* for host country.

2- PTA_{N/N} is a North-North PTA.

3- Significant levels are: * 10%, ** 5%, *** 1%

The results also show that the coefficients on exports are positive and significant. This result suggests that greater exports are associated with higher FDI, which could be explained if

exports are intermediate inputs that would be used by the MNE's affiliate to produce a final product; this would suggest a positive association between exports and FDI (Blonigen, 2001).³⁸

This positive impact of exports on FDI inflows is also found in a study by Saha (2005).

In addition, the results indicate that the coefficient on difference in openness is negative and statistically significant at the 10% confidence level. This indicates that the greater the difference in openness level between the source country and host country, the more likely will be a reduced FDI flow.³⁹ However, the coefficient of this variable is almost zero, so it does not appear to be an important factor in determining FDI.

Evidently, when taxes on international trade are added to the gravity equation, the coefficient of the tax variable for the source country is negative and significant at the 5% confidence level, while the coefficient of the tax variable for the host country is positive but insignificant, which could simply be a result of having fewer observations available for this variable. This result means that while an increase in the taxes on international trade (as a percentage of revenue) for the source country leads to a decrease in its outward FDI by 35%, there is no effect on the inward FDI for the host country. However, adding tax variables leads to an improvement in the magnitude and significance level of the US dummies and distance variables. Furthermore, the coefficient of the contiguous dummy variable becomes positive and significant.

The coefficients of the composite country risk index are also positive and significant for source and host countries at the 1% and 10% confidence level respectively. This indicates that the lower the level of risk, the higher the inward FDI: lowering the risk level by one unit would increase the FDI from the source country by 10% and increase the FDI to the host country by

³⁸ If exports are final products that are substitutes for the product that would be produced by an MNE's affiliate in the same country, this would suggest a negative correlation between exports and FDI.

³⁹ Countries open to international trade provide a good environment for global business operations.

2%.⁴⁰ The transparency coefficient for the source country is positive and significant; the transparency coefficient for the host country is negative and significant.⁴¹ This result is surprising and does not support prior evidence from the literature: a lower quality of institutions, i.e. lowering the transparency level by one unit, would increase the FDI to host country by 7% in this model.

The estimated coefficient for the PTA dummy is one of particular interest. If significant, this dummy will be used to calculate the potential FDI increase or decrease, which equals the difference between the initial FDI level where the dummy equals zero and the potential FDI level where the dummy equals one. For example, if $\beta_i = 0.60$, the potential FDI increase will be the difference between the $\exp(0.60)$ and the $\exp(0)$, i.e. $1.94 - 1 = 94\%$.

Table 3.4 reports the estimation results of model 1. The dummy variable that quantifies the effects of the North-North agreements (PTA_N/N) is positive but insignificant; its coefficient is 0.087. While the coefficient of the dummy variable that quantifies the direct effect of the deep US PTAs (PTA_N/S_US) is negative, the coefficient of the shallow agreements (PTA_N/S_other) is positive. This implies that a deep agreement with the US is likely to decrease bilateral FDI, while at the same time participation in any other shallow agreement is likely to increase the bilateral FDI. This result does not support prior evidence from the literature; however, the coefficients are small and not significant (0.09 and 0.15).⁴² On the other hand, the three dummy variables that quantify the indirect effects of the US PTA are significant. The first dummy variable, to estimate the external effects of PTA, indicates whether the country pairs in the dataset participate in a PTA with the US. PTA_both is positive and significant at the

⁴⁰ The highest overall rating (theoretically 100) indicates the lowest risk, while the lowest rating (theoretically zero) indicates the highest risk.

⁴¹ 1= highest corruption level, 10= lowest corruption level.

⁴² This could be a result of data limitation.

5% confidence level. According to the estimates, FDI is higher by 223% if the source and host countries participate in a PTA with the US. Extra-PTA FDI indirect effects are calculated using the second and third dummy variables. The second dummy variable, PTA_source, which indicates if the source country participates in a PTA with the US but not the host country, is positive and significant at the 10% confidence level. According to the estimates, there is an expected increase of 59% in outward FDI to non-member countries. The third dummy variable, PTA_host, which indicates that the host country participates in a PTA with the US but not the source country, is negative and significant at the 1% confidence level. According to the estimates, there is an expected decrease of 69% in inward FDI from non-member countries. The aggregate predicted percentage changes on inward FDI to Egypt are then calculated and reported in Table 3.5 (based on information provided in Tables 3.4 and 3.5).

Table 3.5 presents the aggregate predicted change in inward FDI to Egypt with the prospective US PTA. The first column reports the initial level of inward FDI to Egypt from the US and from the rest of the world as of 2005. The second column reports the predicted dollar change in Egypt's inward FDI that would be associated with this PTA. The predicted percentage change is equal to the difference in FDI in the pre- and post-PTA. Therefore I begin by differentiating between these two cases. The first case is if the source country had a PTA with the US before and now both have a PTA with the US. Canada turns out to be the only country in an agreement with the US but not Egypt (only source) before the Egypt-US agreement; after the US agreement, Canada and Egypt will both be in a PTA with the US. Therefore the expected percentage change in Canada's FDI to Egypt is equal to the difference between the percentage change associated with the coefficients of PTA_both and PTA_source dummy variables: 223%

and 59%.⁴³ The expected dollar change in inward FDI from Canada to Egypt is calculated by multiplying the initial level of inward FDI to Egypt from Canada by 164%. The rest of the countries in this table present the second case: if “neither” countries had a PTA with the US before and now the host country has a PTA with the US. These countries are in a PTA with neither the US nor Egypt, but after this prospective agreement Egypt becomes a host country. Therefore the expected percentage change should be equal to the difference between the percentage change associated with the coefficients of the PTA_host dummy variable and zero (neither PTA), i.e. -69%. The expected dollar change in inward FDI from these countries to Egypt is calculated by multiplying the initial level of inward FDI to Egypt by -69%. For example, the predicted change in inward FDI to Egypt from the Czech Republic is calculated by multiplying the initial level of inward FDI to Egypt from the Czech Republic by -69%. Finally, the last item in this column is the total predicted dollar change in inward FDI to Egypt divided by the total initial FDI level.⁴⁴ The result is the aggregate predicted percentage change in inward FDI to Egypt. According to this result, there is a potential decrease of 28% in inward FDI to Egypt that would be associated with the US PTA.

⁴³ How the dummy will be used to calculate the potential FDI increase or decrease is explained earlier in this section.

⁴⁴ Note that the initial level of inward FDI to Egypt includes FDI from the US.

Table 3.5: The Predicted Change on FDI to Egypt with The US-PTA / Model 1

	Initial FDI level	Predicted \$ change on FD
<i>Indirect Effects</i>		
<i>Source to Both</i>		
Canada	5.1468	8.4408
<i>Neither to Host</i>		
Czech Republic	0.1275	-0.0880
Denmark	6.2240	-4.2945
Finland	6.7061	-4.6272
Netherlands	6.7771	-4.6762
Turkey	2.0794	-1.4348
United Kingdom	7.7480	-5.3461
<i>Direct Effect</i>		
USA	8.4847	0.0000
Total	43.2936	-12.0261
Total Predicted Percentage Change on FDI to Egypt		-28%

However, this result is not surprising, considering the results of Lederman, Maloney, and Servan (2005), who provide evidence that NAFTA resulted in the diversion of FDI from other countries in Latin America. There are several other explanations for this result as well. First, the positive outlook on PTA formation's effect on FDI usually comes from a focus on competition for investment rather than from the characteristics of the PTA per se. Many such studies in the literature have analyzed different formulations of investment provisions in different PTAs (UNCTAD, 2004a).⁴⁵ According to these studies, NAFTA (the example of a deep US PTA in this study) contains relatively extensive provisions in all of its investment provision categories but does not contain measures on investment promotion or cooperation.⁴⁶ Egypt and European countries have different types of PTAs, so a PTA with the US is likely to decrease investment flows from these countries to Egypt, the host country. Second, the positive view of PTA

⁴⁵ The focus of this paper is not on investment provisions per se. However, for more discussion of this point using the case of NAFTA, see Leshner and Miroudot (2006).

⁴⁶ These provisions are a part of the positive relationship found between the index and FDI flows.

formation also depends on competition for investment through reform, which is usually seen as a good sign (as discussed earlier in the literature review). But this reform could involve improper concessions required by a larger economic power (as Bhagwati, Brecher, and Hatta [1985] fear) instead of occurring through the competitive granting of investment incentives (Adams et al., 2003). This in turn would be associated with diminishing FDI to Egypt as a host country when firms in the source countries have other PTA partners in which to locate their investments.⁴⁷ Finally, there is a possibility that this prospective agreement is more a political than an economic agreement. Trade effects may in fact be the most important economic aspect.

3.4.4 Model 2

According to the results from model 1, the predicted aggregate effect of the US PTA on inward FDI to Egypt is negative and significant (reflected only by indirect effects). However, deep agreements usually cover provisions that are more likely to improve the host country's investment climate, which in turn increases its FDI. It covers provisions dealing with product and market regulation (standards and competition policies), property rights (protection of intellectual property), and other insubstantial assets as well as physical and financial investments. Such regulatory policies are important for the service industry, which has become more important in PTA negotiations as a result of the increasing trade in services and the inclusion of investment policies in bilateral and regional discussions. These provisions involve investment, services, standards, competition, customs cooperation, IPR, and dispute settlement.

In this section, I take a further step to estimate how the extent of a deep agreement affects FDI as an alternative to using the dummy variable method. This approach separates the effect of deep integration provisions in the US trade agreements on FDI. The quantitative analysis in this

⁴⁷ This is called FDI dilution. For more discussion of this point, see Levy et al., (2003).

section relies upon the use of the dummy variables used in model 1 as well as an index of the extent of deep integration provisions in US PTAs. This index quantifies the extent of deep integration provisions in US PTAs to assess how well these provisions explain the bilateral investment. To construct the extensiveness index, each provision that exists in a particular PTA takes the value of one or zero (see Table 3.2). The index is normalized to be between zero and one by dividing the sum of these provisions in the PTA by 7 (the total number of deep integration provisions). The index changes the binary nature of the dummy variables created in the first model by replacing the *I*s of the dummy variable with the index (Leshner & Miroudot, 2006).

Table 3.6 reports the estimation results of model 2. According to these results, the dummy variable that quantifies the effects of the North-North agreements (PTA_N/N) is positive but insignificant and its coefficient is 0.089. The coefficients of the variables that take the value of the index to quantify the potential direct effects of the deep US PTA and the shallow agreement between the country pairs in the dataset are positive (these results support prior evidence from the literature) but insignificant (like model 1). The table also shows that the coefficients of the variables that take the value of the index to quantify the potential indirect effects of the US PTAs are significant. The coefficient of the first variable that takes the value of the index when both source and host countries in the dataset participate in a PTA with the US is positive and significant at the 5% confidence level. According to the results, FDI is higher by 117% if both the source and host countries participate in a PTA with the US and the index takes a value of 1 (all provisions included). Extra-PTA FDI effects are calculated using the second and third variables. The coefficient of the second variable that takes the value of the index if the source country participates in a PTA with the US but not the host country is positive and

significant at the 10% confidence level. According to the results, there is an increase of 43% in outward FDI to non-member countries. The coefficient of the third variable that takes the value of the index if the host country participates in a PTA with the US but not the source country is negative and significant at the 1% confidence level. According to the results, there is a decrease of 62% in inward FDI from non-member countries. The aggregate predicted percentage changes in inward FDI to Egypt is then calculated and reported in Table 3.7 (based on the information provided in Tables 3.6 and 3.7).

Table 3.7 presents the aggregate predicted change in inward FDI to Egypt with the prospective US PTA using the same method as in model 1. According to these results, a PTA with the US is likely to decrease the inward FDI to Egypt by 34%. However, the result does not support the literature that states that deep integration provisions matter to investment.

Table 3.6: Summary of the regression results of the US PTA

Model 2/ The Index		
	Coeff	Std. Err.
GDP _i	0.0369	0.1440
GDP _{-j}	-0.1199**	0.0450
GDPpc _{-i}	-2.7471***	0.3923
GDPpc _{-J}	0.0752	0.0879
Dist	0.3505***	0.0642
contig	0.4934*	0.1934
comlang_off	-0.6386**	0.2185
comlang_ethno	0.7251***	0.1852
colony	0.1392	0.2706
col45	0.4108	0.5340
Exp _i	0.9033***	0.1709
Exp _j	0.2043***	0.0558
Tax _i	-0.3438**	0.1296
Tax _j	0.0076	0.0067
Diff in openness	-0.0013*	0.0007
cri _i	0.0969***	0.0163
cri _j	0.0202*	0.0109
CPI _i	0.1364**	0.0445
CPI _{-j}	-0.0700*	0.0353
PTA _{-N/N}	0.0888	0.1178
PTA deep	0.0461	0.3469
PTA shallow	0.5283	0.3754
PTA both	1.1666**	0.3803
PTA source	0.4318*	0.2318
PTA host	-0.6156***	0.1539
Constant	-11.0683***	2.4013
Number of obs.	371	
R Squared	0.4647	

Notes:

1- *i* for host country and *j* for host country.

2- PTA_{-N/N} is a North-North PTA.

3- Significant levels are: * 10%, ** 5%, *** 1%

Table 3.7: The Predicted Change on FDI to Egypt with The US-PTA/Model 2

	Initial FDI level	Predicted \$ change on FD
<i>Indirect Effects</i>		
<i>Source to Both</i>		
Canada	5.1468	3.8086
<i>Neither to Host</i>		
Czech Republic	0.1275	-0.0791
Denmark	6.2240	-3.8589
Finland	6.7061	-4.1578
Netherlands	6.7771	-4.2018
Turkey	2.0794	-1.2893
United Kingdom	7.7480	-4.8038
<i>Direct Effect</i>		
USA	8.4847	0.0000
Total	43.2936	-14.5819
Total Predicted Percentage Change on FDI to Egypt		-34%

3.4.5 The Role of PTAs on FDI

In order to give a full analysis of this prospective US agreement, it is necessary to re-examine these two models, especially the role of deep PTAs and “all” PTAs (any PTA, deep or shallow) on FDI.

The role of deep PTAs. This section analyzes the effect of deep PTAs on FDI to test whether the results from model 1 and model 2 are sensitive to the use of the US dummy variable. I re-estimate the gravity equation using deep PTA dummy variables such that all deep PTAs are analyzed across the sample (model 1). Table 3.8 presents the estimation results of this regression. The dummy variable that quantifies the effects of the North-North agreements is positive but insignificant, while the deep and shallow PTA dummy variables are not significant. However, the sign and magnitude of these dummy variables are in line with the literature (0.0521272 and -0.122084, respectively). In particular, the coefficient of the first PTA dummy variable, which quantifies the direct effects of deep integration, is positive, indicating that participation in deep

integration increases bilateral FDI flows. In addition, the coefficient of the second PTA dummy variable, which quantifies the direct effects of shallow integration, is negative, indicating that participating in a non-deep integration decreases the bilateral FDI flows. The three deep PTA dummy variables that quantify the indirect effects of deep PTA are positive but insignificant.

Table 3.8: Summary of the regression results of "Deep" PTAs

Model 1/ PTA Dummr		
	Coeff	Std. Err.
GDP _i	0.3035*	0.1303
GDP _{-j}	-0.1307**	0.0495
GDP _{pc-i}	-2.2869***	0.3963
GDP _{pc-J}	0.1134	0.0992
Dist	0.2898***	0.0640
contig	0.4215*	0.2007
comlang_off	-0.4660*	0.2190
comlang_ethno	0.6643**	0.1941
colony	0.1550	0.2800
col45	0.1642	0.5490
Exp _i	0.5321***	0.1506
Exp _j	0.1710**	0.0568
Tax _i	0.0248	0.1050
Tax _j	0.0016	0.0071
Diff in openness	-0.0016*	0.0007
cri _i	0.0846***	0.0166
cri _j	0.0217*	0.0117
CPI _i	0.1275**	0.0465
CPI _{-j}	-0.0990*	0.0388
PTA _{N/N}	0.1431	0.1229
PTA deep	0.0521	0.2398
PTA shallow	-0.1221	0.1718
PTA both	0.2041	0.1460
PTA source	0.3749	0.2947
PTA host	0.1342	0.3343
Constant	-11.4408***	2.5295
Number of obs.	372	
R Squared	0.4265	

Notes:

1- *i* for host country and *j* for host country.

2- PTA_{N/N} is a North-North PTA.

3- Significant levels are: * 10%, ** 5%, *** 1%

Furthermore, I re-estimate the gravity equation using the deep PTA dummy variables and the index of the extensiveness of deep integration provisions in the PTAs such that all PTAs are analyzed across the sample (model 2).⁴⁸ Table 3.9 reports the estimation results.

The coefficients of the variables that quantify the direct effects are positive but insignificant, while the coefficients of the variables that take the value of the index to quantify the indirect effects of the deep agreement are insignificant. The first coefficient of the first variable that takes the value of the index when both the source and host countries in the dataset participate in a deep PTA is positive but insignificant. This result, compared to the effect of a US agreement, which is positive and significant, implies that participation in deep PTAs does not guarantee a higher level of investment than that of countries with PTAs with the US. The coefficient of the second variable that takes the value of the index when the source country but not the host country participates in a deep PTA is positive and significant at the 10% confidence level. However, this significance could be a result of the fact that most of countries in the dataset are developed countries.⁴⁹ Accordingly, participation in a deep PTA increases the outward FDI to non-member countries by 38%. The coefficient of the third variable that takes the value of the index when the host country but not the source country participates in a deep FTA is positive but insignificant.

⁴⁸ The extensiveness index for PTAs is constructed with the same methodology used for the US PTA index.

⁴⁹ This is an expected result: using the OECD outward FDI data entails that source countries are North (developed) countries.

Table 3.9: Summary of the regression results of "Deep" PTAs

Model 2/ The Index		
	Coeff	Std. Err.
GDP _i	0.2983*	0.1292
GDP _j	-0.1218*	0.0511
GDP _{pc-i}	-2.3156***	0.3942
GDP _{pc-J}	0.1077	0.0986
Dist	0.3009***	0.0624
contig	0.4401*	0.2002
comlang_off	-0.4849*	0.2155
comlang_ethno	0.6769***	0.1916
colony	0.0824	0.2841
col45	0.2611	0.5525
Exp _i	0.5431***	0.1485
Exp _j	0.1692**	0.0569
Tax _i	0.0080	0.1044
Tax _j	0.0030	0.0071
Diff in openness	-0.0017*	0.0007
cri _i	0.0853***	0.0166
cri _j	0.0206*	0.0117
CPI _i	0.1285**	0.0462
CPI _j	-0.0997*	0.0386
PTA _{N/N}	0.1366	0.1238
PTA deep	0.1528	0.2524
PTA shallow	0.0130	0.3561
PTA both	0.2086	0.1402
PTA source	0.3826*	0.1995
PTA host	0.1933	0.2043
Constant	-11.5239***	2.4974
Number of obs.	372	
R Squared	0.4297	

Notes:

1- *i* for host country and *j* for host country.

2- PTA_{N/N} is a North-North PTA.

3- Significant levels are: * 10%, ** 5%, *** 1%

The role of "all" PTAs. The purpose of this section is to analyze the role of "all" PTAs (shallow and deep agreements) on FDI to test whether the previous results when testing the role of US PTAs for models 1 and 2 are sensitive to the use of the deep vs. shallow distinction. I re-

estimate the gravity equation such that all PTAs are analyzed across the sample (model 1). In addition to North-North dummy variable, the model includes a dummy variable for “all” agreements (deep and shallow) to measure the direct effects of any type of PTAs. The model also includes the three dummy variables (both, source, and host) that measure the indirect effects of these PTAs. Table 3.10 shows the estimated results of this regression. The PTA dummy variables, including the North-North PTAs, are not significant.

Table 3.10: Summary of the Regression Results of all PTAs

<u>Model 1/ PTA Dummy</u>		
	Coeff	Std. Err.
GDP_i	0.4460*	0.19022
GDP_j	-0.1822*	0.07518
GDPpc-i	-3.8230***	0.60777
GDPpc-J	0.1585086	0.14552
Dist	0.3336***	0.08209
contig	0.5401*	0.30116
comlang_off	-0.7119*	0.32971
comlang_ethno	1.0479***	0.29611
colony	0.1112889	0.43109
col45	0.3537671	0.84645
Exp_i	0.8987***	0.22035
Exp_j	0.2346**	0.0841
Tax_i	-0.0485461	0.1659
Tax_j	0.0020681	0.01071
Diff in openness	-0.0022*	0.00109
cri_i	0.1379***	0.02571
cri_j	0.0363*	0.01794
CPI_i	0.2154**	0.07138
CPI-j	-0.1488*	0.05924
PTA_N/N	0.2616742	0.18602
PTA All	0.2236809	0.19962
PTA both	-0.2986073	0.22623
PTA source	0.0745938	0.35671
FTA host	(dropped)	
Constant	-16.2722***	3.63148
Number of obs.	372	
R Squared	0.4112	

Notes:

1- i for host country and j for host country.

2- PTA_N/N is a North-North PTA.

3- Significant levels are: * 10%, **

I then re-estimate the gravity equation using the same dummy variables and the index of the extensiveness of deep integration provisions in the PTAs such that all PTAs are analyzed across the sample (model 2).⁵⁰ Table 3.11 shows the estimation results. The coefficients of the variables that take the value of the PTA dummy variables are positive but insignificant. However, it is obvious that the estimated points are larger than the estimated points with the dummy variables (model 2).

Table 3.11: Summary of the Regression Results of "all" PTAs

Model 2/ The Index		
	Coeff	Std. Err.
GDP _i	0.4538*	0.1911973
GDP _j	-0.1692*	0.0779158
GDPpc _i	-3.9761***	0.6157252
GDPpc _J	0.1586749	0.147999
Dist	0.3945***	0.0874254
contig	0.6020*	0.3032157
comlang_off	-0.7643*	0.3309716
comlang_ethno	1.0735***	0.2968456
colony	0.0929045	0.4401367
col45	0.3871296	0.8537694
Exp _i	0.8906***	0.2222279
Exp _j	0.2098*	0.0842794
Tax _i	-0.0059985	0.1610461
Tax _j	0.0023439	0.0108783
Diff in openness	-0.0025*	0.0010889
cri _i	0.1464***	0.0259304
cri _j	0.0348*	0.0180372
CPI _i	0.2190**	0.0715762
CPI _j	-0.1562**	0.0592801
PTA _{N/N}	0.2262381	0.1886118
PTA All	0.4806163	0.3192399
PTA both	0.1220676	0.2241627
PTA source	0.5605333	0.3523771
FTA host	0.3078832	0.3266371
Constant	-16.0901***	3.662318
Number of obs.	372	
R Squared	0.4134	

Notes:

1- i for host country and j for host country.

2- PTA_{N/N} is a North-North PTA.

3- Significant levels are: * 10%, ** 5%, *** 1%

⁵⁰ The extensiveness index for PTAs is constructed with the same methodology used for the US PTA index.

3.5. Conclusion

Despite reforms in the Egyptian economy and progress in the economic relationships between Egypt and the United States, neither country seems to be willing to fully accept a prospective bilateral FTA. Reaching this agreement would be appropriate in light of recent changes in US trade policy, reforms in Egypt, and increasing world attention to the Middle East. This analysis of a deep trade agreement demonstrates the importance of this PTA by providing quantitative estimates of the potential aggregate impacts of this agreement on inward FDI to Egypt. The study provides quantitative points of reference for discussions on the economic impacts of this prospective agreement. To measure these impacts, the study first distinguishes between the Egyptian relationship with the US pre-and post-PTA and its relationship with all other countries to capture the external effects of a PTA. It then adds six PTA dummy variables to the gravity model to capture the aggregate (direct and indirect) effects of a US PTA on inward FDI to Egypt. In addition, it demonstrates the importance of deep integration provisions in this agreement by using a dummy variable for deep agreement and creating an index of the extensiveness of deep integration provisions in PTAs. Finally, it applies the gravity model to Egypt's inward FDI for the year 2005. The paper finds evidence that this prospective FTA would be associated with negative inward FDI to Egypt between 28% and 34% of the 2005 level. The results show that the aggregate effect on inward FDI to Egypt from the US-PTA is reflected only in its indirect effect.

The following findings may be of practical relevance to trade negotiators in Egypt (as developing country trade negotiators) who are designing the features of this prospective PTA. First, joining just any PTA does not necessarily increase FDI inflows. This paper provides evidence that preferential trade agreement with the US is associated with a significant decrease

in inward FDI to Egypt. It also provides evidence that including deep integration provisions in the US PTA is associated with an additional decrease in inward FDI to Egypt. Furthermore, it provides evidence that the effect of this PTA is not limited to the inward FDI from the US but extends to FDI from other trading partners.

Therefore it is sensible for Egypt to give more attention to the characteristics of this PTA. In particular, careful analysis of the investment provisions in this US deep agreement should be considered such that this prospective PTA avoids any potential conflict of interest for Egypt and its trading partners, notably European countries. In return, such analysis could prevent negative effects on FDI to Egypt from the rest of the world.

Finally, these results are not promising for developing countries in general, particularly since North-South agreements tend to include the most extensive investment provisions; however, FDI can be an important stimulus for development. Therefore developing countries need to consider both the direct and indirect effects of their trade agreements.

References

- Adams, R., Dee, P., Gali, J., & McGuire, G. (2003). The trade and investment effects of preferential trading arrangements: Old and new evidence. Australian Productivity Commission Staff Working Paper.
- Anderson, J. E. (1979). A theoretical foundation for the gravity equation. *American Economic Review*, 69, 106-16.
- Bénassy-Quéré, A., Coupet, M. & Mayer, T. (2005). Institutional determinants of foreign investment. CEPII Working Document 2005-05.
- Bhagwati, J.N., Brecher, R., & Hatta, T. (1985). The generalized theory of transfers and welfare: Exogenous (policy-imposed) and endogenous (transfer-induced) distortions. *Quarterly Journal of Economics* 160(3), 697-714.
- Blomström, M. & Kokko, A. (1997). Regional integration and foreign direct investment. Discussion Paper 1659, Centre for Economic Policy Research, London.
- Blonigen, B. (2001). In search of substitution between foreign production and exports. *Journal of International Economics*, 53, 81-104.
- Burfisher, M., Robinson, S., & Thierfelder, K. (2001). The impact of NAFTA on the United States. *Journal of Economic Perspectives* 15(1), 125–144.
- CEPII (distance data). Retrieved from http://www.cepii.fr/distance/geo_cepii.xls
- CEPII (geographical data). Retrieved from http://www.cepii.fr/distance/geo_cepii.xls
- de Mooij, R. A., & Ederveen, S. (2003). Taxation and foreign direct investment: A synthesis of empirical research. *International Tax and Public Finance*, 10(6): 673-93.
- Dee, P., & Gali J. (2003). The trade and investment effects of preferential trading arrangements. NBER working paper 10160.
- Helpman, E., & Krugman, P. (1985). Market structure and foreign trade: Increasing returns, imperfect competition, and the international economy. Cambridge, MA: MIT Press.
- Krueger, A. (1999). Trade creation and trade diversion under NAFTA. NBER Working Paper 7429.
- Lederman, D., Maloney, W., & Serven, L. (2005). Lessons from NAFTA for Latin America and Caribbean countries: A summary of research findings. Washington, DC: World Bank.
- Leshner, M., & S. Miroudot (2006). Analysis of the economic impact of investment provisions in regional trade agreements. OECD Trade Policy Working Papers 36.

- Levy Y., Stein, E.E., & Daude, C. (2003). Regional integration and the location of FDI. Inter-American Development Bank (IADB) Working Paper 492.
- Maskus, K. (2000). Intellectual property rights in the global economy. Washington, DC: Institute for International Economics.
- Medvedev, D. (2006). Preferential trade agreements and their role in world trade. World Bank Policy Research Working Paper 4038.
- Office of the United States Trade Representative. (2009). Free trade agreements. Retrieved from <http://www.ustr.gov/trade-agreements/free-trade-agreements>
- Organisation for Economic Co-operation and Development. (2008). OECD international direct investment statistics online database. Retrieved from http://www.oecd.org/document/53/0,3343,en_21571361_33915056_39108725_1_1_1_1,00.html
- Poyhonen, P. (1963). A tentative model for the volume of trade between countries. *Weltwirtschaftliches Archiv*, 90, 93-99.
- The PRS Group. (2008). International country risk guide. Retrieved from <http://www.prsgroup.com/CountryData.aspx>
- Saha, N. (2005). Three essays on foreign direct investment and economic growth in developing countries. Unpublished doctoral dissertation, Utah State University.
- Stein, E., & Daude, C. (2001). Institutions, integration, and the location of foreign direct investment. Working paper, Inter-American Development Bank, Research Department.
- te Velde, D.W., & Bezemer, D. (2004). Regional Integration and foreign direct investment in developing countries. *Transnational Corporations*, 15 (2).
- Tinbergen, J. (1962). *Shaping the world economy: Suggestions for an international economic policy*. New York: The Twentieth Century Fund.
- Transparency International. (2005) Corruption perceptions index. Retrieved from http://www.transparency.org/policy_research/surveys_indices/cpi/2005
- UNCTAD. (1993). *World investment report 1993*. Geneva: UNCTAD.
- UNCTAD. (2003). *World investment report 2003*. Geneva: UNCTAD.
- UNCTAD. (2004a). *International investment agreements: Key issues, vols. 1 & 2*. New York and Geneva: UNCTAD.

UNCTAD .(2004b). World investment report 2004. Geneva: UNCTAD.

The World Bank. (2005). Global economic prospects: Trade, regionalism and development. Washington, DC: The World Bank.

The World Bank (2009). World development indicators (WDI). Retrieved from <http://ddp-ext.worldbank.org/ext/DDPQQ/member.do?method=getMembers&userid=1&queryId=1>
35

World Trade Organization. (2008). World trade report 2008. Retrieved from http://www.wto.org/english/res_e/booksp_e/anrep_e/world_trade_report08_e.pdf

4. The United States-Egypt Free Trade Agreement and Foreign Aid: Complements or Substitutes?

4.1. Introduction and Motivation

Foreign aid plays a key role in advancing the United States' (US) foreign policy goals in the Middle East. The US has a number of interests in the region: the support of the Israeli state and its peaceful relations with its Arab neighbors, the protection of vital petroleum supplies, and the fight against international terrorism. However, the main objectives of the US policy toward Egypt, in addition to sustaining the Egyptian-Israeli peace treaty, are to maintain regional stability, improve bilateral relations, and continue military cooperation.

Egypt plays an important role in achieving US strategic objectives in the Middle East. This role has been affirmed by successive administrations; therefore since 1979, Egypt has been the second largest recipient, after Israel, of US foreign aid. However, over the last decade, the US has significantly reduced its economic aid to Egypt to the point that many observers believe that it could be further reduced or even phased out entirely in the years ahead.⁵¹ However, while US and Egyptian commissioners have expressed a desire to “graduate” Egypt from US bilateral economic assistance, neither side seems to agree on how aid should be reduced over the coming decade.

This expected reduction or phase-out of American foreign aid to Egypt will cause a shift in the focus of US and Egyptian interests from aid to trade and investment. This change in the

⁵¹ More discussion of this point is to come in section 4.3.

relationship will promote economic liberalization in Egypt and thus raises the debate about the FTA between the US and Egypt as a substitute for foreign aid. However, despite reforms in the Egyptian economy and progress in the economic relationship between the US and Egypt, neither country seems to be fully willing to accept this FTA. This could be the result of difficulties associated with this agreement, namely a potential conflict of interest for Egypt and its trading partners, notably the European Union (EU). The close relations between Egypt and the US might also raise political conflicts in the region given the situation in Iraq and Palestine. Finally, Egypt must engage in necessary economic and political reforms since the proposed FTA includes political clauses that guarantee democracy, the rule of law, human rights, and respect for and protection of minorities.

Since the start of major aid programs in the late 1950s, the role of aid and its allocation has received extensive attention in the theoretical and empirical literature. The literature on foreign aid can be divided into two sets: one investigates the effects of foreign aid on the recipient countries (in the empirical literature: the recipient needs model). The other investigates the determinants of foreign aid, or which donor gives to which recipient (in the empirical literature: the donor self-interest model). Some studies provide strong evidence that US aid relationships follow the donor self-interest model (McKinley & Little, 1979; Ruttan, 1989). Accordingly, the focus of this paper is on the economic and strategic self-interest of the donor country, which leads to a discussion of the aid versus trade issue.

Aid versus trade explores whether foreign assistance or export access to the donor's markets is the best way to help a recipient country. According to some studies, bilateral foreign aid and bilateral trade agreement are substitutes, and there is therefore no need for a recipient country to enter a formal trade agreement. According to these studies, recipient countries receive

more aid to keep their markets open, meaning that higher total exports of donor countries to the recipient countries lead to greater aid allocations (Dudley & Montmarquette, 1976; Neumayer, 2003a). In addition, some claim that aid may be given as a reward to recipient countries for promoting imports from donor countries. This implies that donors can influence recipients to grant preferential treatment to their imports without entering a formal trade agreement (Younas, 2008). On the other hand, other studies suggest that bilateral foreign aid and bilateral trade agreement are complements: there is a need for both aid and trade. These studies find that many developing and emerging market countries still seriously depend on trade tax revenues. This implies that further trade liberalization, or entering formal trade agreements, may be stalled unless these recipient countries are able to develop alternative sources of revenue like aid (Younas & Bandyopadhyay, 2009).

This debate about the relationship between bilateral aid and bilateral trade agreements makes it difficult to predict the interaction between US aid to Egypt and a prospective Free Trade Agreement (FTA) between the two countries. This paper adds to the current literature by estimating explicitly the change in US aid to the recipient countries that are associated with its bilateral trade agreements. In particular, I estimate the change of US aid to recipient countries pre-and post-FTA from 1980, when there were no US FTAs, to 2004, when there were many US FTAs. This method quantifies the expected change in US aid to Egypt if this prospective FTA comes into being and furthermore attempts to determine whether US aid and US-FTAs are complements or substitutes. The economic and political adjustments that are required for achieving this FTA could act as a catalyst to improve institutions in Egypt. Therefore this study will also investigate the extent to which institutional reforms could benefit the Egyptian economy by improving the quality of its government and political climate. I will estimate the

expected change in US aid to Egypt taking into account the institutional strength and quality of the government by including an index of bureaucracy quality and the composite country risk index as an indicator of the political climate.

This paper moves beyond the existing literature to directly link foreign aid and free trade agreements. It tests explicitly for the Egyptian relationship with the US pre-and post-FTA and uses new databases on foreign aid, Net Aid Transfers (NAT), for 19 Organization for Economic Co-operation and Development (OECD) donors and 54 recipients for the years 1980, 2004, and 2007. This new database avoids the problems of calculating Official Development Assistance (ODA) and includes both Egypt and Israel, who are the two main beneficiaries of US foreign aid. Previous studies focused on multilateral and/or bilateral foreign aid; however, this study considers only bilateral aid.

The rest of this paper is organized as follows: section 2 presents a brief history of foreign aid, while section 3 presents a brief history of US aid to Egypt. Section 4 summarizes theories that explain why we may expect to see a relationship between aid and FTAs. Section 5 presents the existing empirical evidence on these possible relationships. Section 6 presents the empirical methodology and a description of the data. Section 7 covers the estimation results. Finally, section 8 concludes.

4.2. A Brief History of Foreign Aid

Official Development Assistance (ODA), commonly known as foreign aid, includes loans, grants, and technical assistance made on concessional terms by all bilateral and multilateral donors to promote economic development and reduce poverty in developing countries.

In the 1950s, multilateral and bilateral aid programs to independent countries were established. However, this decade may be described as a decade of US domination in aid distribution (the US accounted for two-thirds of total aid in that decade). The escalation of the Cold War caused the US to use the strategy of mixing development aid with military aid.⁵²

In the 1960s, an increased number of newly independent countries associated with the troubled financial state of some already independent countries (notably India) caused the emergence of greater amounts of bilateral programs with multiple channels (Hjertholm & White, 1998).

By 1969, this increase in the amount of bilateral aid programs caused a failure of coordination and implied a lack of purpose and direction in development aid. To fix these deficits, the Pearson Commission suggested many changes, among them the need to strengthen multilateral aid programs.

The past fifty years have witnessed the growth in number and size of major multilateral development agencies. The first group of agencies includes the United Nations (UN) and its sister institutions created at Bretton Woods. However, the development objective of this group was not clear from the beginning. The second set of agencies is the regional development banks, which were developed in the late 1950s and had a clear development agenda. In 1970, UN development agencies dominated multilateral ODA distribution; by 1977-1978, however, they had been overtaken by the World Bank Group. Nevertheless, today bilateral aid dominates multilateral aid: approximately 25% of aid is multilateral, while the other 75% is bilateral (Boone, 1996).

⁵² Aid used mainly to stop countries from going communist.

4.2.1 Why Net Aid Transfers (NAT) Rather than Net ODA

Net Aid Transfers (NAT) is a new measure of foreign aid flow developed by David Roodman⁵³ that is built from the same underlying data as ODA. In order to build the analysis of this paper on more accurate results, I use NAT data rather than the standard net ODA. Net ODA causes problems when it is used for aid research and donor evaluation for the following two reasons. First, while net ODA is a capital flow concept, NAT is a net transfer concept in that it is net only for principal payments received on ODA loans, not for interest received on such loans, while NAT is net of both. Second, NAT excludes cancellation of old non-ODA loans.

4.3. A Brief History of US Aid to Egypt

US aid to Egypt increased extensively after the Camp David Accords of 1978. The assistance, \$815 million economic and \$1.3 billion military, was greatly needed given the inter-Arab isolation of Egypt in response to its decision to make peace with Israel. This aid was effective in strengthening Egypt's new strategic relationship with the US and was an important incentive to keep the peace treaty with Israel alive. In addition, the two-decade-old US aid package was heavily weighted toward projects that helped improve the Egyptian economy as a whole.

However, much has changed in the last two decades, and the US may phase out, reduce, or modify its aid to Egypt for several reasons: the expiration of the Glide Path agreement, the continued expansion of Egypt's economy, the growing desire for more US-Egyptian trade, Egypt's restored role among other Arab countries, and Egypt's unwillingness to accept conditions for US aid. However, while US and Egyptian officials have expressed a desire to

⁵³ For more information on NAT, see Roodman (2005).

“graduate” Egypt from US bilateral economic assistance, neither side seems to agree on how aid should be reduced over the coming decade. Furthermore, this expected reduction or phase-out of American foreign aid to Egypt causes a shift in focus from aid to trade and investment. This is reflected in the relationship between the US and Egypt: the objective goals of US aid are advancing Egyptian exports, making Egypt more attractive for foreign investors, and assisting Egypt's transition to a free-market economy. However, since the economic reforms in Egypt are an unfinished project, economists suggest that a phase-out of economic aid to Egypt would be inappropriate (Satloff & Clawson, 1998).

4.4. The Theory of Interactions between Aid and Trade

Economists have taken different approaches to explaining the interactions between aid and trade. There are two approaches: One focuses on effects on the recipient's welfare, while the other focuses on the donor's welfare in the interaction between foreign aid and trade policies in the two countries.

4.4.1. The Interaction between Aid Flow and Trade Policy in the Recipient Country

The interaction between foreign aid and the recipient's trade policy is directly related to the theory of income transfers in international trade theory. This interaction has two effects: the direct income effect and the terms-of-trade effect (indirect effect). The direct income effect is known as the transfer problem and is a part of a well-established tradition in international economics (Samuelson, 1952). In addition to the direct income effect, an international transfer between two countries is likely to have important terms of trade that also affect both donor and recipient countries; however, the sign of the terms of trade depends on the relative size of the marginal propensities to import of the two economies.

The discussion of income transfers has received considerable attention in the literature with special attention to the issue of international transfer worsening the welfare of the recipient country (the so-called transfer paradox). According to Leontief (1936), Samuelson (1947), and Mundell (1960), a sufficient condition for an international transfer not to be welfare worsening for the recipient country in a two-country world is free trade with no distortions. Furthermore, the literature finds two more possibilities to avoid welfare-worsening transfers for the recipient country. The first is to consider a multilateral world economy (see Gale, 1974; Brecher & Bhagwati, 1981; Yano, 1983). In addition, Bhagwati, Brecher, and Hatta (1983), who incorporate the theory of distortions and welfare, demonstrate that the transfer paradox cannot arise in a three-agent framework if the recipient and the donor countries jointly impose an optimal tariff policy against the non-participant country. Interestingly, this result suggests a certain degree of complementarity between foreign aid and regional trade policy in order to avoid welfare-worsening outcomes in the recipient economy. The second possibility is to avoid domestic distortions if trade barriers are important for the donor or the recipient countries. Ohyama (1974), Brecher and Bhagwati (1982), and Bhagwati, Brecher, and Hatta (1985) suggest that an increase in the transfer from abroad needs to be accompanied by a reduction of the recipient's tariffs to minimize the possibility of a transfer paradox in the recipient country. These results suggest a possible complementary relationship between aid and trade policies in the recipient country.

4.4.2. The Interaction between Aid Flows and the Donor's Trade Policy: Aid Versus Trade

The aid versus trade question explores whether foreign assistance or export access to the donor's markets is the best way to help a recipient country. Alternatively, it can be seen as a discussion of the possible substitute relationship between aid and trade policies in the donor country. One of the earliest scholars to address the issue of aid versus trade is Johnson (1967),

who made the general presumption that to assist a recipient country, aid is unambiguously better than trade.⁵⁴

Economists have taken different approaches to investigate the issue of aid versus trade. One of these approaches is “a simple rule-based comparison of the relative worth of export revenues relative to foreign assistance for the recipient country” (Suwa-Eisenmann & Verdier, 2007, p. 491). This approach, however, fails to place the discussion in a full cost–benefit context from the perspective of the donor country. The authors propose three types of economic effects that should be considered in this comparison. The first type is direct economic effects--how a dollar of aid compares to a dollar of foreign exchange earned by exporting. The second type is indirect economic effects on the recipient’s economy: the effects on the public sector, the supply of savings, and domestic prices, which affect the private sector of the economy. Finally, there are some general political-economy considerations related to self-sufficiency.

The analysis of direct economic effects considers three possible types of aid. The first is aid as a pure gift without any constraint. In this case, aid places additional resources directly in the hands of the recipient’s government for investment. Hence it saves the recipient country the extra cost of import substitution: the cost of making at home the goods which aid makes it possible to be imported. Johnson (1967) claims that at the margin, foreign aid is always worth more than trade. The second is aid with a tied component, the purchase of goods from the donor’s market. In that case, the value of exports can exceed the value of aid if the recipient countries are far enough from world markets (costly imports). Finally, according to Thirwall (1976), the condition for trade to dominate aid is that the excess cost of import substitution and

⁵⁴ The discussion in this section follows that of Suwa-Eisenman and Verdier (2007).

the ratio of the price of goods supplied by aid to the best competitive price obtainable on free markets be quite high relative to the aid component of assistance, which should be low.

Therefore aid as a policy for helping the recipient economy is likely to dominate export-market access if given as soft loans (below the market rate) rather than on pure grant terms.

On the other hand, export revenues and aid income have indirect economic effects on the recipient country: they may influence the tendency to save and hence affect the growth rate of the recipient country. They may also affect relative prices, in particular the real exchange rate, which can cause, for instance, “Dutch disease” effects. Furthermore, they may also influence public-sector spending patterns. Hence if indirect effects are different for export revenues and aid income, they will certainly affect the relative effects of trade compared to aid. Finally, if there is a concern for self-sufficiency, then the recipient country may attach a higher weight to a dollar earned by exporting than to a dollar received as foreign aid. In this case the relative quality of trade versus aid for the recipient country is affected and hence the value of aid is obviously diminished relative to trade.

4.5. Aid and Trade: Empirical Evidence

The empirical evidence on foreign aid that has usually been used in support of ODA can be divided into two sets. The first set is the investigation of the effects of foreign aid on the recipient countries in terms of reduction in poverty and welfare enhancements (the recipient need model). The second set is the investigation of the determinants of foreign aid, based on the economic and strategic self-interest of the donor country (the donor self-interest model).⁵⁵

⁵⁵ This set includes factors including poverty of the recipients, strategic interests, colonial history, trade, and political institutions of the recipients.

The role of aid in reducing poverty and enhancing the welfare of recipient countries remains debatable. Some significant literature on aid allocation suggests that the main reasons for aid allocation decisions are the political, economic, and strategic interests of donors rather than development interests (McKinley & Little, 1977, 1979; Maizels & Nissanke, 1984; Dowling & Hiemenz, 1985; Svensson, 1999; Neumayer, 2003a, b). Recent studies like that of Alesina and Dollar (2000) add more factors that affect donors' aid allocation's decisions, such as colonial ties of aid-recipient countries and support of donor countries in UN voting.

Studies that provide strong evidence that the US aid relationship follows the donor interest model include that of McKinley and Little (1979). The authors establish two explicit models of aid allocation, the recipient need and the donor interest model, and provide different classifications and explanations of the aid relationship. The authors then test these models against the distribution of US aid for each of the years 1960–70. Their results provide strong evidence for the donor interest model. This paper therefore also focuses on the economic and strategic self-interest of the donor country.

The donor self-interest model has also been analyzed by Ruttan (1989), who claims that donor self-interest arguments imply that development assistance improves the economic or political interests of the donor country in that it promotes exports from the donor country. According to Ruttan, this can best be seen in the obvious gains to the US economy from exports of goods and services subsidized by aid programs. Ruttan further points out that development assistance is a valuable complement to the donor's political strategy since its main purpose is to strengthen the political commitment of the aid recipient to the donor country.

The interaction between foreign aid and trade agreements has been analyzed using various approaches. Some of the econometric studies suggest that bilateral foreign aid and

bilateral trade agreements are substitutes, while some suggest they are complements. According to Dudley and Montmarquette (1976) and Neumayer (2003a), donors use this economic strategy to secure larger trade benefits: higher total exports from donor countries to the recipient countries results in greater aid allocation. Other studies, like that of Younas (2008), suggest that aid may also be given as a reward to recipient countries for promoting imports and removing trade restrictions. Hence donors can influence recipients to grant preferential treatment to their imports without entering a formal trade agreement. All of these studies suggest a substitution relationship between bilateral foreign aid and bilateral trade agreements: if there is no trade agreement, aid is needed to encourage recipient countries to keep their markets open.

On the other hand, some empirical studies suggest that bilateral foreign aid and bilateral trade agreements are complements: in order for a recipient country to enter a formal trade agreement, aid is needed as compensation for the loss of trade tax revenue or as an incentive to enter the formal trade agreement. This argument builds on the need of many developing and emerging market countries for trade tax revenues. Khattry and Rao (2002) claim that low-income countries' revenue constraints have continued after a decade of trade reforms and emphasize the need for a fiscally realistic development strategy in the post-liberalization period. Other studies investigate whether donors use aid to compensate recipient countries for lost trade revenue or possibly to reward them for moving toward trade liberalization to the point that further trade liberalization in developing countries may be stalled unless these countries develop alternative sources of revenue. According to Younas and Bandyopadhyay (2009), many developing countries rely heavily on trade tax revenue. Therefore there is a possibility that trade liberalization will lead to significant fiscal instability and affect government spending on development activities. As a result, when donors make their aid allocation decisions for

developing nations, they may provide larger amounts of aid to compensate or reward liberalizing recipient countries.

In light of these opposing views of the relationship between aid and trade agreements, it is hard to predict the future interaction between US aid and the prospective FTA between the US and Egypt. In particular it is difficult to determine whether US aid to Egypt and the prospective FTA are complements or substitutes. The following section attempts to clarify this issue.

4.6. Empirical Analysis

4.6.1 Data Description and Model Setup

In this paper, I use the standard aid equation with standard explanatory variables.⁵⁶ However, I extend the aid equation to identify a number of variables describing both recipients' needs and donors' self-interests. I also use a new database on foreign aid (NAT) for 19 OECD donors and 54 recipient countries that includes developing and transition economies, providing a fair representation of recipient countries in the whole world for the years 1980, 2004 and 2007 (see Table 4.1).⁵⁷ I include only aid recipient countries that are developing and transition economies because previous studies conclude that they face the highest uncompensated loss of tax trade revenue from trade liberalization (Baungsgaard & Keen, 2005; Khattry & Rao, 2002; Rodrik, 1992).

I estimate the expected change in US aid if the prospective US-Egypt FTA exists by testing the position of US foreign aid to its recipient countries pre-and post-FTA. Since the US signed its first bilateral FTA with Israel in 1985, I chose 1980 to represent a year without US FTAs.⁵⁸

⁵⁶ For example, see McKinley and Little (1978, 1979); Trumbull and Wall (1994); and Burnside and Dollar (2000).

⁵⁷ The number of host countries is constrained by the availability of data that includes US aid to recipients that are also partners in FTAs.

⁵⁸ The United States has free trade agreements in force with 17 countries.

Table 4.1: Donor and Recipient Countries

Donor Country		
Austria	Switzerland	Canada
Denmark	United Kingdom	United States
France	Finland	Japan
Germany	Luxembourg	South Korea
Italy	Czech Republic	New Zealand
Netherlands	Hungary	
Norway	Poland	
Recipient Country		
Algeria	Hong Kong, China	Russia
Antigua & Barbuda	Hungary	St. Kitts-Nevis
Argentina	India	St. Lucia
Belize	Indonesia	St. Vincent & Grenadines
Brazil	Israel	Singapore
Bulgaria	Jordan	Slovak Republic
Chile	Korea, Dem. Rep.	Slovenia
China	Lebanon	South Africa
Colombia	Macedonia	Spain
Croatia	Malaysia	Suriname
Czech Republic	Mexico	Swaziland
Dominican Republic	Montenegro	Syria
Egypt	Morocco	Thailand
French Polynesia	Netherlands Antilles	Trinidad & Tobago
Greece	Philippines	Tunisia
Grenada	Poland	Turkey
Guyana	Portugal	Ukraine
Haiti	Romania	Venezuela

Previous studies have excluded Egypt and/or Israel from their data as they receive a disproportionately high amount of aid from the US, based on their strategic locations in the Middle East (Younas & Bandyopadhyay, 2009). However, since the primary rationale of this paper is to evaluate the relationship between US aid and US FTAs as a strategic interest, I will include both countries in my analysis. I therefore chose 2004 to represent a year with FTAs as the data for this year are the most recent and complete data on foreign aid available and include Israel and Egypt.

The economic and political adjustments required for achieving this FTA could act as a catalyst to improve the institutions and political climate in Egypt. Therefore I re-estimate the expected change in aid flows from the US, taking into account the institutional strength and quality of the government by including an index of bureaucracy quality. I also re-estimate the expected change in aid from the US as a result of the new political environment that would be associated with this FTA by including the composite country risk index.

As a robustness check, I re-do the estimations using data for the year 2007 as a year with FTAs. These data do not include Israel but include more US FTAs (Chile, Colombia, and Morocco).

In this paper, I use the change in the variable (as year-to-year difference). I use the change in aid and not the flow as a dependent variable for two reasons: first, by taking the first difference, I am able to net out country fixed effects. Second, given that Egypt and Israel receive a disproportionately high amount of aid from the US, using aid levels as a dependent variable could lead to serious heteroscedasticity issues because residuals would probably be much bigger in absolute value for large than for small recipients (Berthélemy & Tichit, 2002).

I provide the calculations of the difference in the variables pre- and post- FTA with the US derived from the following sources. The NAT data is collected from the Center for Global Development. The main independent variable, the US FTA dummy variable, data is collected from The Office of the United States Trade Representative (USTR). Gross Domestic Product (GDP) per capita and population in the recipient country are collected from World Development Indicators (WDI). An index of bureaucracy quality is compiled by the PRS. Finally, I also include the composite country risk index as an indicator of the political climate; this index is compiled by the PRS Group.

4.6.2 The Model

The model includes a dummy variable for the FTA as a strategic interest for the donor. This method represents a departure from the literature in the sense that this model includes a dummy variable that indicates whether an FTA exists between the US and the recipient country or not (most studies would include a dummy variable, equal to 1 when the recipient country is Egypt and the donor is the USA and 0 otherwise, as an indicator of Egypt as a political factor, i.e. alliances or strategic location). Using cross-section data, the aid-pair difference regression models take the following form:

$$NAT_{ij} = b_0 + b_1 \text{pop}_j + b_2 \text{GDPpc}_j + b_3 \text{FTAus} + b_4 Z_j$$

where all real variables are defined in logs. All variables are defined as the change in this variable: each variable is a pair of this variable before and after the FTA. i indexes donors, j indexes aid recipients, NAT_{ij} is the change in aid from donor i to recipients j , and pop_j measures the population of the recipient country, measured in millions. GDPpc_j measures the GDP per capita of the recipient country at international prices (Purchasing Power Parity [PPP]). FTAus is the dummy variable that equals unity if there is an FTA between the US and recipient country and zero otherwise. Finally, Z_j is a set of variables capturing the political interests of donors.

I try different specifications changing the sets of independent variables (models 1, 2, and 3) to check the robustness of the results. Model 1 includes the US dummy variable, model 2 includes an index of bureaucracy quality, and model 3 includes the composite country risk index. Tables 4.2 and 4.3 present the estimation results of these regressions.

In addition, I analyze the role of all Preferential Trade Agreements (PTAs) on foreign aid to test whether the previous results of the US-FTAs are sensitive to the use of the US dummy variable. I re-estimate the aid equation using “all” PTA dummy variables such that all deep PTAs

are analyzed across the sample.⁵⁹ Tables 4.4 and 4.5 present the estimation results of these regressions.

4.7. Estimation Results

According to the theory, donors direct their aid to low-income countries, but they are also influenced by population (more populous countries get more aid) and by variables that reflect their own strategic interests: if population and per capita income are constant, donors will generally give more aid to countries with better institutions/policies. Therefore the impact of GDP per capita on foreign aid could be positive or negative depending on the donor's interests (Dollar & Levin, 2002).

4.7.1 The Role of the US FTA⁶⁰

In this section, I estimate potential US aid to Egypt with the US FTA. The quantitative analysis in this section relies upon three regression models. In model 1, I add the US FTA dummy variables to capture the effects of US FTA on its foreign aid to countries entering such agreements. In model 2, I include an index of bureaucracy quality as an indicator of the institutional strength and quality of the government. Finally, in model 3, I include the composite country risk index as an indicator of the political environment.

Table 4.2 reveals the estimation results for 2004. The estimated coefficient for the US FTA dummy is of particular interest. If significant, this dummy will be used to calculate the

⁵⁹ The term "Preferential Trade Agreement" (PTA) refers to a regional trade agreement (RTA) or regional arrangement between two or more countries (including FTA).

⁶⁰ I use the term PTA interchangeably with FTA. A Free Trade Area (FTA) is a PTA with zero tariffs on trade among its members and where member countries set their external tariffs independently.

potential foreign aid that would be associated with the US FTAs.

Table 4.2: Summary of the regression results of the US-FTA/year 2004

	Model 1		Model 2		Model 3	
	Coeff	Std. Err.	Coeff	Std. Err.	Coeff	Std. Err.
GDPpc_4	-0.0679	0.1617	0.6086	0.5846	0.1757	0.2343
pop_j4	0.3790***	0.0554	-0.1232	0.4980	0.6119***	0.1494
FTAus_4	4.0358***	0.9355	3.4170*	1.3641	3.8951**	1.0891
burj_4			2.5784*	1.2863		
crrj_4					0.2133	0.2384
Constant	-4.8158**	1.7278	-2.6340	10.7452	-11.1862**	3.5170
Number of obs.	152		32		79	
R Squared	0.3415		0.2877		0.2855	

Notes:

1- j for recipient country.

2- Significant levels are: * 10%, ** 5%, *** 1%

In model 1, after controlling for other variables, the results indicate that the FTA dummy variable is positive and significant at the 1% confidence level. This means that aid is higher if there is an FTA between the recipient country and the US. According to this result, an FTA with the US would likely increase US aid to Egypt by 400%. Furthermore, the coefficient of GDP per capita is negative but insignificant, but the coefficient of population is positive and statistically significant at the 1% confidence level. This indicates that the greater the difference in population level before and after the FTA, the greater the aid flows to the recipient country. According to the results, a 1% increase in the difference in population pre-and post-FTA increases aid flows to recipient country by 0.38%.

Model 2 also indicates that the US FTA dummy variable is positive and significant at the 10% confidence level. According to this result, an FTA with the US would likely increase US aid to Egypt by 340%. Furthermore, the coefficient of the index of bureaucracy quality is positive and significant at the 10% confidence level. This means that a positive change in institutional strength and quality of the government leads to more aid to the recipient country. Therefore

improvements in the institutions and quality of the government in Egypt are expected to increase the aid received from the US by 250%. The coefficient of GDP per capita is positive but insignificant. Finally, the coefficient of population is negative but statistically insignificant.

Model 3 again indicates that the US FTA dummy variable is positive and significant at the 5% confidence level. According to this result, an FTA with the US would likely increase US aid to Egypt by 390%. The coefficient of the composite country risk index is positive but insignificant; the coefficient of GDP per capita is also positive but insignificant. Finally, the coefficient of population is positive and statistically significant at the 1% confidence level. According to the results, a 1% increase in the difference in population pre-and post-FTA increases aid flows to the recipient country by 0.61%.

Table 4.3 shows the estimation results for 2007. In model 1, the results, after controlling

Table 4.3: Summary of the regression results of the US-FTA/year 2007

	Model 1		Model 2		Model 3	
	Coeff	Std. Err.	Coeff	Std. Err.	Coeff	Std. Err.
GDPpc_7	0.4702*	0.2287	0.7611	0.7758	0.3750	0.4000
pop_j7	0.4612***	0.0588	-0.1504	0.5297	0.5102**	0.1778
FTAus_7	4.1993***	1.0097	3.6341*	1.5058	4.1397**	1.2744
butj_7			3.1636*	1.5734		
crrj_7					0.5463*	0.3123
Constant	-10.5170***	2.3209	-3.4578	12.4780	-11.8832*	4.5398
Number of obs.	161		32		83	
R Squared	0.3401		0.2568		0.2687	

Notes:

1- j for recipient country.

2- Significant levels are: * 10%, ** 5%, *** 1%

for other variables, indicate that the FTA dummy variable is positive and significant at the 1% confidence level. According to this result, an FTA with the US would likely increase US aid to Egypt by 420%. The coefficient of GDP per capita is positive and statistically significant at the 10% confidence level. Thus a 1% increase in the difference in GDPpc pre-and post-FTA increases aid flows to the recipient country by 0.47%. Finally, the coefficient of population is

positive and statistically significant at the 1% confidence level. A 1% increase in the difference in population pre-and post-FTA thus increases aid flows to the recipient country by 0.46%.

Model 2 also indicates that the US FTA dummy variable is positive and significant at the 10% confidence level. According to this result, an FTA with the US would likely increase US aid to Egypt by 360%. Furthermore, the coefficient of the index of bureaucracy quality is positive and significant at the 10% confidence level. Therefore improvements in the institutions and quality of the government in Egypt are expected to increase the aid received from the US by 310%. The coefficient of GDP per capita is positive but insignificant. Finally, the coefficient of population is negative but statistically insignificant.

Model 3 again indicates that the US FTA dummy variable is positive and significant at the 5% confidence level. According to this result, an FTA with the US would likely increase US aid to Egypt by 410%. The coefficient of the composite country risk index is positive and significant at the 10% confidence level. This suggests that an improvement in the political climate in Egypt would likely increase US aid to Egypt by 0.55%. The coefficient of GDP per capita is positive but insignificant. Finally, the coefficient of population is positive and statistically significant at the 5% confidence level. Therefore a 1% increase in the difference in population pre-and post-FTA increases aid flows to the recipient country by 0.51%.

4.7.2 The Role of “All” PTAs

The purpose of this section is to analyze the role of “all” PTAs on foreign aid to test whether the previous results for the US FTAs are specific to the US. I re-estimate the aid equation using “all” PTA dummy variables such that all PTAs are analyzed across the sample.

Table 4.4 shows the estimation results for 2004. The estimated coefficient for the PTA dummy is of particular interest. If significant, this dummy will be used to calculate the potential foreign aid associated with PTAs. However, after controlling for other variables, the results

indicate that the coefficient of this PTA dummy variable is positive but insignificant for the three models. According to these results, the existence of a trade agreement between a donor and a recipient has no effect on the donor's aid allocation decision.

Table 4.4: Summary of the regression results of All PTAs/year 2004

	Model 1		Model 2		Model 3	
	Coeff	Std. Err.	Coeff	Std. Err.	Coeff	Std. Err.
GDPpc_4	-0.0977	0.1713	0.6931	0.6443	0.1880	0.2612
pop_j4	0.3806***	0.0588	0.1382	0.5771	0.6104**	0.2142
PTA_4	0.2061	0.3640	0.6899	0.8941	0.1712	0.7170
burj_4			2.6148*	1.4355		
crrj_4					0.0736	0.3184
Constant	-4.5621*	1.8321	-7.6810	12.4365	-10.8343*	4.1799
Number of obs.	152		32		79	
R Squared	0.2603		0.1411		0.1626	

Notes:

1- j for recipient country.

2- Significant levels are: * 10%, ** 5%, *** 1%

According to the estimation results of model 1, the coefficient of GDP per capita is negative but insignificant. However, the coefficient of population is positive and statistically significant at the 1% confidence level: A 1% increase in the difference in population pre-and post-FTA increases aid flows to the recipient country by 0.38%.

The estimation results of model 2 indicate that the coefficient of the index of bureaucracy quality is positive and significant at the 10% confidence level. This means that improvements in the institutions and quality of the government in Egypt are expected to increase the aid received from the US by 260%. The coefficients of GDP per capita and population are positive but insignificant.

Finally, after including the composite country risk index in model 3, the coefficients of all independent variables except population are positive but insignificant. The coefficient of population is positive and statistically significant at the 5% confidence level. Hence a 1%

increase in the difference in population pre-and post-FTA increases aid flows to the recipient country by 0.61%.

Table 4.5 shows the estimation results for 2007. The results indicate that the coefficient of the PTA dummy variable is insignificant for the three models.

Table 4.5: Summary of the regression results of All PTAs/year 2007

	Model 1		Model 2		Model 3	
	Coeff	Std. Err.	Coeff	Std. Err.	Coeff	Std. Err.
GDPpc_7	0.4676*	0.2409	0.4088	0.9908	0.5886	0.4525
pop_j7	0.4667***	0.0619	0.0496	0.5913	0.4185*	0.2185
PTA_7	-0.2279	0.3935	0.7930	0.9953	-0.4215	0.7363
burj_7			1.9337	1.9574		
crrj_7					0.5592	0.3550
Constant	-10.4267***	2.4480	-3.7800	13.6871	-11.7651*	4.8543
Number of obs.	161		32		83	
R Squared	0.269		0.1172		0.1732	

Notes:

1- *j* for recipient country.

2- Significant levels are: * 10%, ** 5%, *** 1%

The estimation results of model 1 reveal that the coefficient of GDP per capita is positive and significant at the 10% confidence level. According to the results, a 1% increase in the difference in GDPpc pre-and post-FTA increases aid flows to the recipient country by 0.46%. However, the coefficient of population is also positive and statistically significant at the 1% confidence level, and a 1% increase in the difference in population pre-and post-FTA increases aid flows to the recipient country by 0.46%.

The estimation results of model 2 indicate that the coefficient of the index of bureaucracy quality is positive but insignificant and that the coefficients of GDP per capita and population are also positive but insignificant.

Finally, after including the composite country risk index in model 3, the coefficients of all independent variables except population are insignificant. The coefficient of population is

positive and statistically significant at the 10% confidence level. Thus a 1% increase in the difference in population pre-and post-FTA increases aid flows to the recipient country by 0.41%.

4.8. Conclusion

This paper investigates several questions regarding the interactions between US foreign aid and its various bilateral free trade agreements. The primary question regards the expected relationship between US aid and the prospective FTA between the US and Egypt and whether the two are complements or substitutes. The paper explicitly estimates the potential change in US aid to Egypt associated with this FTA by adding a dummy variable for the US FTA in the aid equation; it also uses a new database on foreign aid, the NAT, for 19 OECD donors and 54 recipients for 1980 and 2004. The prospective FTA between Egypt and the US has a significant and positive impact on the foreign aid that would be received from the US. This result supports the complementary relationship between US foreign aid and US FTAs: US aid to Egypt would increase by about 300% to 400% compared with its aid level without the FTA.

The second question is concerned with how the economic and political reform required to achieve this FTA affects US aid to Egypt. The analysis shows that if the US can trigger reforms in Egypt that make the index of bureaucracy quality show improvements in institutional quality and government strength level, US aid to Egypt could increase by about 250% to 320%. Furthermore, the results show that the required preliminary political reforms in Egypt could increase US aid to Egypt by about 50%. Therefore it is sensible for Egypt to engage in the necessary economic and political reforms and give more attention to its trade policy.

Finally, to provide a full analysis of this prospective US agreement, I re-examined these models in analyzing the role of “all” PTAs on foreign aid to test whether the previous results for the US-FTAs are specific to the US. I re-estimated the aid equation using “all” PTA dummy variables such that all PTAs are analyzed across the sample. According to the estimated results, there is no empirical evidence supporting either a complementary or a substitution relationship. With regard to the second question, the coefficient of the index of bureaucracy quality is positive and significant at the 10% confidence level.

References

- Alesina, A., & Dollar, D. (2000). Who gives foreign aid to whom and why? *Journal of Economic Growth*, 5, 33-63.
- Baunsgaard, T., & Keen, M. (2005). *Tax revenue and (or?) trade liberalization*. International Monetary Fund Working Paper No. WP/05/112. Retrieved from www.imf.org/external/pubs/ft/wp/2005/wp05112.pdf
- Berthélemy, J. C., & Tichit, A. (2002). *Bilateral donors' aid allocation*. WIDER Discussion Paper, 2002/123.
- Bhagwati, J.N., Brecher, R., & Hatta, T. (1983). The generalized theory of transfers and welfare: bilateral transfers in a multilateral world. *American Economic Review*, 73, 57-62.
- Bhagwati, J.N., Brecher, R., & Hatta, T. (1985). The generalized theory of transfers and welfare: exogenous (policy-imposed) and endogenous (transfer-induced) distortions. *Quarterly Journal of Economics*, 100 (3), 697-714.
- Boone, P. (1996). Politics and the effectiveness of foreign aid. *European Economic Review*, 40, 289-329.
- Brecher, R., & Bhagwati, J. (1981). Foreign ownership and the theory of trade and welfare. *Journal of Political Economy*, 89, 497-511.
- Brecher, R., & Bhagwati, J. (1982). Immiserizing transfers from abroad. *Journal of International Economics*, 13, 353-64.
- Burnside, C., & Dollar, D. (2000). Aid, policies, and growth. *American Economic Review*, 90(4), 847-68.
- Dollar, D., & Levin, V. (2004). *The increasing selectivity of foreign aid, 1984-2002*. World Bank Policy Research Working Paper 3299.
- Dowling, J.M. & Hiemenz, U. (1985). Biases in allocation of foreign aid: Some new evidence. *World Development*, 13(4), 535-41
- Dudley, L., & Montmarquette, C. (1976) A model of the supply of bilateral foreign aid. *American Economic Review*, 66(1), 132-42
- Gale, D. (1974). Exchange equilibrium and coalition: An example. *Journal of Mathematical Economics*, 1, 63-66.
- Hjertholm, P., & White, H. (1998, October). *Survey of foreign aid: History, trends and allocation*. Paper presented to the Development Economics Research Group in Copenhagen.

- Johnson, H. (1967). *Economic policies toward less developed countries*. London: Allen & Unwin.
- Khattry, B., & Rao, M.J. (2002, August). Fiscal faux pas? An analysis of the revenue implications of trade liberalization. *World Development*, 30 (8), 1431-1444.
- Leontief, W. (1936). Note on the pure theory of capital transfer. In *Explorations in economics: Notes and essays contributed in honour of F. W. Taussig* (pp. 84–92). New York: McGraw Hill.
- Maizels, A., and Nissanke, M. K. (1984). Motivations for aid to developing countries. *World Development*, 12 (9): 879-900.
- McKinley, R. D., & Little, R. (1977). A foreign policy model of US bilateral aid allocation. *World Politics*, 30 (1): 58-86.
- McKinley, R. D., & Little, R. (1979). The US aid relationship: A test of the recipient need and the donor interest model. *Political Studies*, 27 (2): 236-250.
- Mundell, R. (1960). The pure theory of international trade. *American Economic Review*, 50, 67–110.
- Neumayer, E. (2003a). The determinants of aid allocation by regional multilateral development banks and United Nations agencies. *International Studies Quarterly*, 47, 101–122.
- Neumayer, E. (2003b). “Is respect for human rights rewarded? An analysis of total bilateral and multilateral aid flows. *Human Rights Quarterly*, 25, 510–527.
- Office of the United States Trade Representative. (2009). Free trade agreements. Retrieved from <http://www.ustr.gov/trade-agreements/free-trade-agreements>
- Ohyama, M. (1974). Tariffs and the transfer paradox. *Keio Economic Studies*, 11, 29–45.
- The PRS Group. (2008). Index of bureaucracy quality. Retrieved from <http://www.prsgroup.com/CountryData.aspx>
- The PRS Group. (2008). International country risk guide. Retrieved from <http://www.prsgroup.com/CountryData.aspx>
- Rodrik, D. (1992). The limits of trade policy reform in developing countries. *Journal of Economic Perspective*, 6(1), 87-105.
- Roodman, D. (2005). *An index of donor performance*. Center for Global Development Working Paper 67.

- Ruttan, V.W. (1989). Why foreign economic assistance? *Economic Development and Cultural Change* 37, 411-24.
- Samuelson, P. A. (1947). *Foundations of economic analysis*. Cambridge, MA: Harvard University Press
- Samuelson, P. A. (1952). The transfer problem and transport costs: The terms of trade when trade impediments are absent. *The Economic Journal*, 62, 278–89.
- Satloff, R., & Clawson, P. (1998). *U.S. economic aid to Egypt: Designing a new, pro-growth package*. The Washington Institute for Near East Policy, Policy Watch # 324.
- Suwa-Eisenmann, A., & Verdier, T. (2007). Aid and trade. *Oxford Review of Economic Policy*, 23(3), 481–507
- Svensson, J. (1999). Aid, growth and democracy. *Economics and Politics*, 11(3), 275–297.
- Thirwall, A.P. (1976). When is trade more valuable than aid? *Journal of Development Studies*, 12, 35–41.
- Trumbull, W.N., & Wall, H.J. (1994). Estimating aid-allocation criteria with panel data. *Economic Journal*, 104(425), 876-882.
- The World Bank (2009). World development indicators (WDI). Retrieved from <http://ddp-ext.worldbank.org/ext/DDPQQ/member.do?method=getMembers&userid=1&queryId=135>
- Yano, M. (1983). Welfare aspects of the transfer problem. *Journal of International Economics*, 15, 277–289.
- Younas, J. (2008). Motivation of bilateral aid allocation: Altruism or trade benefits. *European Journal of Political Economy*, 24(3), 661-74.
- Younas, J., & Bandyopadhyay, S. (2009, May/June). Do donors care about declining trade revenue from liberalization? An analysis of bilateral aid allocation. *Federal Reserve Bank of St. Louis Review*, 91(3), 141-153.

5. Overall Conclusions

How trade policy can affect Egypt is an important policy question. This question was investigated in three essays that quantify the impact of a prospective bilateral Free Trade Agreement (FTA) between Egypt and the United States. In the first essay, I examined the effects of accessing the US market as well as the effects of Egyptian institutional quality on trade. In the second essay, I showed how participation in this agreement would affect inward foreign direct investment to Egypt from the US and the rest of the world. Finally, in the third essay, I attempted to determine whether Egypt's participation in this agreement would entail a complement or a substitute to US foreign aid.

From my analysis of the data, I can make the following conclusions. First, in general terms, a US-Egypt FTA would be beneficial in that it would help Egypt improve its economic performance and thus improve the political climate of the region. Furthermore, both countries will be worse off without this agreement because of the trade diversions of current Egyptian PTAs and because the need for domestic reforms in Egypt reduces the welfare gains of any current agreement. Also, US exports to Egypt would decline with increasing numbers of Egyptian PTAs.

There was some uncertainty in that deeper integration did not necessarily create a more efficient trade agreement. In fact, for deeper integration, Egypt must engage in necessary economic and political reform. In addition, a US FTA could entail a potential conflict of interests

for Egypt and its trading partners. Finally, it is still unclear whether participation in this agreement would be a complement or a substitute to US foreign aid.

However, there were some clear indications in my results of the benefits of a US-Egypt FTA. For one, the FTA can increase aggregate exports to the US between 140 and 157%. This may offset the reduction of inward FDI to Egypt, between 28% and 34% of the level of 2005, which would be associated with the prospective FTA. At the same time, the FTA would lead to increased foreign aid from the US to Egypt.

These costs and benefits of a potential US-Egypt FTA should be taken into account in order to enter into a treaty that benefits both partners in terms of both economic gains and political stability.