Do Bilateral FTAs Increase Trade?
Case Study: Oman, Bahrain, and their US-FTAs

By Demic Tipitino

Presented to the Department of Economics, University of Oregon, as partial fulfillment of requirements for honors in Economics.

Under the supervision of prof. Bruce Blonigen

June 2011
Do Bilateral FTAs Increase Trade?  
Case Study: Oman, Bahrain and their USFTAs

Abstract

Over the past 30 years bilateral trade agreements have skyrocketed from under ten to over 400 FTAs for statistically significant effects. I find that there is overall no change in trade due to the FTA at the country level, but that at the industry level there in fact is. The results are statistically significant mostly at the 1% level. Further I find that in the areas where the US and the two respective Gulf countries appear to have a comparative advantage trade is actually increased in the opposite direction.

Approved __________________________  Date 0/3/11
1. Introduction

It is widely assumed in economics that free trade is a catalyst for economic growth. However crafting public policy to help realize the gains theory would suggest are there has eluded and evades most governments for a number of reasons still today.

It has been shown time and time again from prominent economists such as (Kemp, 1962) who empirically expanded on Samuelsson’s assertion that restricted trade is better than no trade, and free trade better then the latter, and (Bhagwati, 1968) (Krugman, 1993), to more recent studies such as (Jeffrey Frankel, 1999) (James Gwartney, 2001) and (Jeffery Sachs, 1995) that trade integration is good for all parties involved. Sachs and Warner in particular point out that open economies observed growth in all cases, and this was after controlling for variables like education and rule of law. In fact a review of their study points out growth even in the African economies that marginally liberalized. Furthermore, Frenkel and Romer show that for every increase in trade of 1%, per capita income increased 2% over the period of time in their study.

However the question is not if trade is good, as this was the debate of the last generation, but if the tools we possess for increasing trade between countries are in fact working. To this end one economist has done much work. Andrew Rose in several papers (Rose, 2002), (Rose A., 2005) has studied the effects of current institutions on trade. In his first paper he concluded that the WTO, and before that the GATT, did not systematically increase trade by simply becoming a member. In
his second paper above he further asserted that the OECD did a much better job at increasing worldwide trade. However he leaves out an important gap that these are multilateral institutions and very little work has been done on bilateral trade agreements. Assessing two cases where bilateral agreements have been used is thus the gap this paper intends to fill.

In Oman’s lead up to accession into the WTO it came to the IMF and World Bank for help in assessing what targets should be set for the near and long term. The World Bank responded (World Bank, 1994) by suggesting that Oman’s significant investment in the economy including labor market, investment, financing, and regulatory regimes were inefficient. They recommended that the government limit itself to traditional areas of the economy. As it turns out, Oman partly took their advice and came up with Vision 2020, which is a long-term goal. Notably included in the vision were three new attributes: opening the economy to trade, lifting controls on foreign investment, and encouraging vocational training to help the domestic market (Ministry of Information). In a previous paper I looked at the affects of the FTA on foreign investment controls and property rights in Oman and found that there had been severe implementation problems within the Sultanate. This paper’s purpose then turns to the first area; has the FTA increased trade to a statistically and economically significant level? Although my main focus was on the Sultanate, I also regressed the data for Bahrain as well to see if there might be any differences in trade growth comparing the two Gulf countries.

(Looney, 2009) argues that the recent progress in Oman’s economic development is in large part due to its increase in economic freedom. The Economic
Freedom of the World index has ranked Oman 20, up 9 spots from 2005, which was the start of negotiations with the United States and 19 spots from 2000 when it entered the WTO. However there has been no work to determine if this economic freedom in law has translated into a statistically significant gains from trade.

There has been some work done on bilateral trade agreements. The US-Jordan FTA has been given much attention and (Lawrence, 2006) points out that the biggest effect from the US-Jordan FTA has been the appearance of new industries for export in Jordan. Concurrently the balance of trade has changed from a Jordanian deficit of $239 million in 2000 to a $650 million surplus in 2005. This dynamic change was not predicted before the agreement was signed.

Lawrence also examined protectionism in the Middle East and comments extensively on the high levels of bureaucratic inefficiency in the Middle East as a whole. Additionally the region's trade is severely limited within itself, as well as strategic trading partners. And a study at the IMF, (Soderling, 2005), points out that not only is the Middle East and North Africa (MENA) underutilizing Europe, by far its closest large trading market, but that there are sizable gains from trade to be had by exploiting the US market. It would be assumed that the biggest tool the region would have to exploit this underperforming market would be an FTA, which then provides the impetus for this paper.

There has to date been no empirical analysis on free trade expansion in the Sultanate of Oman, or Bahrain, and very limited data on the Middle East as a whole. Thus, this paper attempts to fill gaps left by economists such as Rose, Lawrence, and
Soderling in assessing if there was not only a statistical difference in trade from the passage of these bilateral FTAs, but an economically significant one.

This paper uses US census data for the Gulf Cooperation Council Countries on a monthly basis and by industry as a data set over the most recent 7 years to assess the effect the FTAs had on trade between the two countries and the United States. I tested the hypothesis that the Omani-US and Bahraini-US FTAs have positive effects on trade between the two countries. This proves to be untrue, as the results are not statistically different from the null hypothesis of no effect.

There are however some important results, that at the industry level there were changes made, and although these were not all positive, in most large industries the effects were indeed positive. In fact out of the 14 areas that were both statistically and economically significant as defined later, 12 are positive changes. Thus although overall trade did not change, trade in subsequent industries did.

One final fact was ascertained and it is that in the two industries where the US and either Oman or Bahrain exported the most, what can be thought of as their comparative advantage, trade actually shifted to the other country at a statistically significant level. The foreign countries exports of mineral fuels and lubricants actually decreased a sizable amount while US exports increased. At the same time a traditional US export industry in machinery and transport saw larger chunks of the market taken by the foreign countries’ home markets. It is unclear what the cause of this is, however, and leaves important questions that need to be answered.
2. Brief History of the US-Omani and Bahraini FTA's

In 2003, then President Bush outlined the Middle Eastern Free Trade Agreement, MEFTA, an initiative to widely expand trade to the region. The agreement is being done bottom up, with a six step process: WTO membership, Generalized System of Preferences, Trade and Investment Framework Agreements (TIFAs), Bilateral Investment Treaties, FTAs, and finally Middle East Partnership Initiatives. This last aspect is a fund so that partner countries can receive assistance in restructuring legal frameworks and other issues that come with opening an economy. So far the US has five FTAs in MENA, with TIFAs signed in 13 countries. There are two in the Gulf, which is this paper's focus.

Although the reasons for joining an FTA for Middle Eastern economies, with high unemployment, and volatile oil prices, are clear, it is unlikely the US will gain large sums directly from the agreements, including that of the FTA with Oman. MEFTA was initiated with the backdrop of 9/11, and as it stands trade between the US and MENA is currently low. Only about 6% of MENA imports and 8% of exports go to and from the US (USITC, 2009). The fact that US interests are primarily geopolitical is outlined fully in (Lawrence R. Z., 2006).

There is a clear need for change. The Middle East despite GAFTA, the Gulf Area Free Trade Agreement and Agidar, do not even trade fully within themselves. In fact despite all the economic gains the Middle East has seen over the past two decades, these gains have been because of macroeconomic stabilization, and in the areas of trade and business environment MENA is simply not up to par (Dipak
Dasgupta, 2004). Exports to other MENA countries for instance in 2006 were only
9% of exports, whereas 30% went to Europe. The problem is that the region as
stated above suffers from heavy bureaucracy problems, and many regulations
Western businesses and investors simply don’t want to deal with, such as agency
requirements and restricted property rights. But as (Lawrence R. Z., 2006) points
out, the nature of recent US agreements has been geared toward easing these
restrictions.

The first of this new breed of agreement was Jordan. Although much shorter
(only around 20 pages) than the 200 page documents that are the US-Omani and US-
Bahraini FTAs, it was the first to try and use domestic policy, and included in it a
requirement that Jordan sign WIPO, or the World Intellectual Property Organization
Treaty, (Rosen, 2004). The Israeli and West Bank/ Gaza agreements are also in this
new breed in that they represent very little sums of trade, but are huge politically.

On the surface, the Omani and Bahraini trade agreements make all
manufactured goods duty free, and get rid of all remaining tariffs within ten
years(United States Trade Representative, 2005). But there are more to these
agreements. They include labor, environmental, and agency regulations not present
in other agreements. And possibly more importantly, the countries are given access
to Middle Easter Partnership Initiative (MEPI) grants to help reform their regulatory
system. Recall that (Gwartney, 2006) found a positive impact on FDI from
liberalization, the same sort of liberalization that occurred in Oman’s financial
markets just prior to signing the FTA with the United States But they listed one
caveat; legal structure and security of property rights were statistically significant at the 1% level.

The Bahraini FTA was first of the two signed in 2005 and put into law at the end of 2006. Oman’s FTA followed in 2007 and was signed into law January 1st 2009. Both FTA’s covered everything from government procurement to intellectual property rights. They mandated that what had been closed off foreign companies become open to US investment, and most obviously cut tariffs on nearly all goods. As the argument for bilateral FTA’s will be a continuing one in the American political climate for years to come as a way to increase trade this issue is imperative to discuss. Congressman Paul Ryan (Ryan, 2009) said in a statement to the Brookings institute, these agreements are pivotal to increasing trade between the US and the Middle East. This study examines whether this is in fact true.

3. Methodology

3.1 Empirical Specifications

In this paper I attempt to ascertain if trade has been systematically affected by the imposition of Free Trade Agreements between the United States and the Gulf countries of Oman and Bahrain. Normally trade is assessed using a gravity equation using annual data, but for this study I used high frequency monthly data across multiple industries to form regressions of imports and exports done monthly over the span of 7 years to the specifications below.
\[
\text{exportsbycountry} = \sum \alpha_i \text{Oman} + \alpha_2 \text{Bhr} + \alpha_3 \text{Sau} + \alpha_4 \text{Qat} + \alpha_5 \text{Kwt} + \alpha_6 \text{FTA_Oman} + \alpha_{7-80} (ym2 - ym73) + \nu_s \quad (1)
\]

This is one of four baseline models where \((\nu_s)\) is the mean zero error term. The other base models are as follows.

\[
\text{importsfromcountry} = \sum \alpha_i \text{Oman} + \alpha_2 \text{Bhr} + \alpha_3 \text{Sau} + \alpha_4 \text{Qat} + \alpha_5 \text{Kwt} + \alpha_6 \text{FTA_Oman} + \alpha_{7-80} (ym2 - ym73) + \nu_s \quad (2)
\]

\[
\text{exportsbycountry} = \sum \alpha_i \text{Oman} + \alpha_2 \text{Bhr} + \alpha_3 \text{Sau} + \alpha_4 \text{Qat} + \alpha_5 \text{Kwt} + \alpha_6 \text{FTA_Bhr} + \alpha_{7-80} (ym2 - ym73) + \nu_s \quad (3)
\]

\[
\text{importsfromcountry} = \sum \alpha_i \text{Oman} + \alpha_2 \text{Bhr} + \alpha_3 \text{Sau} + \alpha_4 \text{Qat} + \alpha_5 \text{Kwt} + \alpha_6 \text{FTA_Bhr} + \alpha_{7-80} (ym2 - ym73) + \nu_s \quad (4)
\]

In these models (\text{importsfromcountry}) is the dependent variable and is a measure of the amount of imports the United States has from the country in question. Thus, the other dependent variable (\text{exportsbycountry}) is a measure of US exports to the country in question. These measures are given in thousands for convenience.

It was important that the regression control for the recession of 2009 because, specifically for Oman, (although statistically it may have been problematic for Bahrain as well) there was a problem in assessing gains from trade while worldwide trade came to a halt at the exact point of implementation of the FTA. There could have been a problem with the model in this way if I did not control for the recession correctly as it could have caused a spurious negative affect on the FTA. Additionally the recession hit some parts of the world differently, and as the region had experienced high oil prices in the pre 2008-2009 period, the severe drop in oil
prices must have affected what is a major export for many of the countries. Thus the endogeneity of the negative oil price shock was a concern.

These concerns led me to create a control group which needed to be based on similar economies. Although I had originally assumed a larger group might be better, I instead opted for a seemingly obvious one in the Gulf Cooperation Council countries, or the GCC. These countries have very similar economies with generally close inflation rates, unemployment rates, percentage of public expenditure in the economy and more. Although very different in size, it is widely assumed they were mostly affected similarly by the recession.

So I regressed my dependent variables on \((\text{Oman}), (\text{Bhr}), (\text{Sau}), (\text{Kwt})\), representing the data for Oman, Bahrain, Saudi Arabia, and Kuwait respectively. I used the United Arab Emirates as my reference group, which is the reason many of the coefficients you will see are negative as trade between the US and the UAE is large, and so trade with the other countries seems relatively small.

I then created a two variables that would represent the FTAs with the respective countries, \((\text{FTA_Oman})\), and \((\text{FTA_Bhr})\). Setting up a dummy that would be 1 when the Oman data was turned on by the Oman dummy after the year 2009, and 1 when the Bahrain data was on after 2007 created these. I expected the coefficients on these to be positive if not significant. I then was required to add in dummies called \((\text{FTA_O})\), and \((\text{FTA_B})\) which applied to all countries to control for the fact that these agreements may have had some effect on all of the economies because of spillover.
After regressing the original dependent variables (exportsfromcountry), and (importsbycountry) on the independent variables above, as well as year dummies, the r^2 terms were far to low, so I created a set of year-month dummies denoted from ym2 to ym73. These were used to try and control for fluctuations in output across all GCC countries due to the recession and possibly yield a more correct result. It had little effect on the r^2 term increasing it marginally, but not to an acceptable level.

This base model depicting the country level effects shows no significant changes due to the FTA in either the positive or negative direction. However, in order to check the model I collapsed the industry data into a new set of variable thus taking the 4038 data points I had and creating 437 new variables without industries denoted. The results of this regression are found in table 1 and represent a more robust estimate of the impact. Here the r^2 term is above .9 signaling a better model.

As I explain later, I set out to see if although no statistically significant effects had happened to trade as a whole because of the FTAs, could there have been industry change?. I then proceeded to model the same dependent variables but by industry. I ran the regressions (1),(2),(3),(4), again but this time only included data for industry 1 then 2 then 3 ect... Running the above four regressions again for each industry finally showed some affect. And even better the r^2 term increased to a robust level, between .6 and .8 most of the time.

The results from these regressions were conclusive on some industries and not on others however to be sure I ran one last regression. Logging the dependent
variables, a technique widely shown to produce better results with less variance I created two new dependent variables in (limports) and (lexports), which were drawn from logging the imports and exports data in my set and adding one to get rid of the 0 terms. This yielded the final models below.

\[
\text{limports} = \sum \alpha_i \text{Oman} + \alpha_2 \text{Bhr} + \alpha_3 \text{Sau} + \alpha_4 \text{Qat} + \alpha_5 \text{Kwt} + \alpha_6 \text{FTA-Oman} + \alpha_{7-80} (\text{ym2 - ym73}) + \nu_x
\]  
(6)

\[
\text{lexports} = \sum \alpha_i \text{Oman} + \alpha_2 \text{Bhr} + \alpha_3 \text{Sau} + \alpha_4 \text{Qat} + \alpha_5 \text{Kwt} + \alpha_6 \text{FTA-Bhr} + \alpha_{7-80} (\text{ym2 - ym73}) + \nu_x
\]  
(7)

These models had a slightly higher r^2 across the board and thus were more believable.

As I briefly stated I regressed all of the above regressions for each of the 10 SITC industry markers (a key in table 5 is provided) separately, thus eventually running a set of 80 different regressions. These results are shown in the appendix as tables 1 and 2.

3.2 Data

I acquired my data from the US Census Bureau censtats website at http://censtats.census.gov which uses the SITC or Standard International Trade Categories to index all products crossing the US Border. The data is updated by the Census Bureau monthly, and I used the monthly data for my final data set. Censtats reports the import and export data based on US dollar amount in thousands for 10 different industries, as well as by country. The nine industries: 0-food and live
animals, 1-beverage and tobacco, 2-crude materials and, 3-mineral fuels and lubricants, 4-animal and vegetable oils, fats and waxes, 5- chemicals, 6-manufactured goods, 7- machinery and transport equipment, 8 miscellaneous manufactures articles, 9 commodities and transactions not classified elsewhere.

Data are pulled for every month since January 2005 to January 2011 thus covering six complete years. I used data for Oman, Bahrain, Kuwait, Saudi Arabia the United Arab Emirates, and Qatar again because, as a control group, the GCC countries represent very similar economies which behave on a macro and micro level in much of the same way. Going back to 2005 should be enough time to see a trend as this gives 24 months of data before the Bahrain FTA was put into place, and 48 months before Oman’s.

One issue is the relatively little data present after the Oman FTA was signed into law (about 24 months), however given that the results match pretty closely with those of Bahrain, and the r^2 terms were high enough so as to be statistically robust, I am confident that enough data was taken into account.

I am highly confident in the results from the models as the r^2 terms which can be found in tables 1-3 show the models are explaining most of the dependent variables and the results are verified by the non-logged regressions in most cases at a statistically significant level. Additionally, the f-statistics all conclude the impossibility that all variables are jointly zero.
4 Results

4.1 Base Model- Country Level Effects

The country level results are found in table 1A. At the country level there is almost no statistically significant effect from the implementation of the FTAs. When I ran the original base models, models 1-8 from section 3, I found that under no model was there a statistically significant change at the country level after the implementation of the US-Omani or US-Bahraini FTAs. These however were not verified by a robust r^2 term and I needed to improve the model.

After collapsing the data from the industry level into a new data set I tested for country level significance. These results, seen in table 1B verify what the base models had said, but with a robust r^2 term. Only US exports to Bahrain increased at a statistically robust level (5%) with an OLS estimate of .211148. Neither imports from Bahrain or either exports or imports from Oman were impacted at the country level due to the FTA. But this does not meant there were no effects due to the FTA.

4.2 Industry Specific Effects

In general the most important findings of the study was that there was no statistical difference after the FTA for either Bahrain or Oman as a whole, that is, the implementation of the FTA did not in either case increase trade over all. However, this is not to say there were no effects at more disaggregated levels. When each industry was regressed separately as described in section 3.1 some effects were
picked up with fairly high statistical significance. For detailed printouts of the results you can see the appendix tables 1 and 2.

In the cases of both Oman and Bahrain, US imports of food and live animals increased. In the case of Oman this was a 203% increase and in the case of Bahrain it totaled 209%. In fact in the Bahrain case, US exports also increased by 31%. Corroborating statistics from the non-logged regressions bolster these results.

One expected area of change was in the area of beverages and tobacco, where the easing of “moral” restrictions signaled a swift uptick in US exports to both Oman and Bahrain to the tune of 66.4% and 126% respectively. These results were also confirmed by statistical analysis of the basic non-logged model which showed results in the same sign, but with a higher variance in magnitude. In both countries, industry 9, (commodities and transactions not classified elsewhere) saw an increase. These are typically financial transactions, which make sense because large sections of the FTA for both countries were devoted to financial rights and property rights for expatriates. Exports in this industry surged by 49% and 20% in Oman and Bahrain respectively. However the FTAs also had differing effects.

In Oman there was also a statistically significant change in industries trade of chemicals, as well as manufactured goods. With respect to chemicals there was an increase in trade in both directions. US exports increased 61% and imports from Oman increased 276% while likewise in manufactured goods US exports surged 55% as a result of the FTA. This last result is important because manufactured goods are typically large and expensive, so tariffs are especially hurtful.
In Bahrain there were also some results which were not uncovered for Oman. US exports of mineral fuels and lubricants increased 71% which is significant because in the same time frame imports from Oman decreased over 200%. This could be evidence for the argument that bilateral FTAs typically divert trade and do not create it. Additionally, in Bahrain trade in machinery and auto transport, (industry 7) increased in both directions. This however is a significant difference from Oman, which saw no statistically significant change in either exports or imports. As a key US marketable export for developing countries this presents a problem for US policy makers. In one major area where these FTAs should have helped create US jobs, almost no change was seen.

Not all results showed a positive correlation however, and the most interesting findings of this study are in the areas where trade actually was hurt by the implementation of the FTA.

Omani exports to the United States decreased in industries 1, 2, and 3, which is interesting because these also represent two of Oman’s traditional strong areas of export. Industries 2 and 3 are crude materials and mineral fuels, which decreased 124% and 217% respectively. In addition, US exports to Bahrain also suffered in the areas of animal and vegetable oil, industry 4, and manufactured goods, industry 6. These decreased 86% and 25% respectively.

4.3 Economically Significant Effects

Out of the 80 regressions that were run, and then further out of the 24 which came back as being statistically significant only 14 represented large sums of trade
to be considered economically meaningful changes. For the purpose of this section economically significant will mean changes in industries which represent at least 1 million US dollars in trade a month. Table 4 is a good gauge of the size of industry trade between the parties involved. These industries represent the true effect of the FTA. US imports of food and live animals were not only statistically significant, but represented one of the larger industries of trade between the US and the two countries. It is important to note US exports very little in this area to Oman and Bahrain, and it is only meaningful in Omani and Bahraini exports to the US.

There was an economically significant increase in US exports of mineral fuels to Bahrain and there was also an economically meaningful surge in Bahraini exports of machinery and auto transport equipment to the US. While in Oman there was a surge of trade in both imports and exports of chemicals and related topics. Imports by the US of Bahraini machinery increased by an economically meaningful level while US exports of chemicals and manufactured goods increased as well.

Finally for both countries the FTA increased the commodities and transactions not accounted elsewhere. This is a sizable area of trade for all countries and increasing in this area represents freeing of financial rules which had a not only statistical difference but actual economic change to the parties involved.

4.4 Summary of results

Two results help shape the outcomes of this paper. The first is that although there is no evidence that the FTA increased trade as a whole between the two countries, if we only look at industries that had a statistically significant change, we
can see some marginal difference. Of these statistically significant areas of import and export only 14 are sizable in economic terms and 12 of these experience growth because of the FTA. Meaning that trade tended to get better by this measure.

The second result however is negative, in that the largest area of trade for the US, that of machinery and transport did not see a rise in exports and the largest area of trade for both Oman and Bahrain, that of mineral fuels and lubricants did not see a surge in exports either. In fact quite the opposite was found; both the US and the smaller parties would seem to be losing some comparative advantage because of the FTA in both of these traditional areas of export.

5 Conclusions

This paper has shown that trade did not significantly increase because of the FTAs at the macro level however there was some movement at the industry level which should not be ignored. This could have been for several reasons. Many industries were more active in lobbying for the FTA and would have been more aware of its benefits, and there was previously larger trade in some industries. It is important to note though that trade did not in fact systematically increase but that the gains were uneven.

Further research is needed on this subject because much of what the FTAs accomplished does not lie in the areas of trade in goods at all. Recall (James Gwartney R. H., 2006) pointed out the effect freeing of investment rules had on economies. This area deserves specific attention in the context of these two case
studies as it is in this area the most good may have been done. A study to model
increases in FDI due to the FTA would an invaluable addition to this papers work.
Appendixes

Table 1A: OLS Estimates for FTA effects using country-level data

<table>
<thead>
<tr>
<th>Country</th>
<th>Log Exports by US</th>
<th>Log Imports by US</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oman</td>
<td>.17330</td>
<td>.16978</td>
</tr>
<tr>
<td>Bahrain</td>
<td>-.20945</td>
<td>.31372</td>
</tr>
</tbody>
</table>

Note: ***, **, and * represent significance at the 1%, 5%, and 10% levels. Additionally, import and export regressions had an average $r^2 = .3$.

Table 1B: OLS Estimates for Collapsed Regressions of Aggregate Economy effects (not by industry)

<table>
<thead>
<tr>
<th>Country</th>
<th>Log Exports by US</th>
<th>Log Imports by US</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oman</td>
<td>-.017602</td>
<td>.25977</td>
</tr>
<tr>
<td>Bahrain</td>
<td>.211148**</td>
<td>-.215733</td>
</tr>
</tbody>
</table>

Note: ** indicates statistical significance at the 5% level. $R^2$ for these regressions all lay above .87.

Table 2: Average monthly change due to implementation of the Oman FTA

<table>
<thead>
<tr>
<th>Industry</th>
<th>Exports by US</th>
<th>Imports by US</th>
<th>Log Exports</th>
<th>Log Imports</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-467%***</td>
<td>-73%</td>
<td>-7.7%</td>
<td>203%***</td>
</tr>
<tr>
<td>1</td>
<td>742%***</td>
<td>-430%**</td>
<td>66.4%***</td>
<td>-31%*</td>
</tr>
<tr>
<td>2</td>
<td>26%</td>
<td>-109021%***</td>
<td>-21%</td>
<td>-124%***</td>
</tr>
<tr>
<td>3</td>
<td>-517%***</td>
<td>350%*</td>
<td>-11%</td>
<td>-217%***</td>
</tr>
<tr>
<td>4</td>
<td>-125%</td>
<td>-100%</td>
<td>.10%</td>
<td>-8%</td>
</tr>
<tr>
<td>5</td>
<td>-37%</td>
<td>84%</td>
<td>61%***</td>
<td>276%***</td>
</tr>
<tr>
<td>6</td>
<td>-19%</td>
<td>184%</td>
<td>55%***</td>
<td>-1%</td>
</tr>
<tr>
<td>7</td>
<td>-59%</td>
<td>-168%</td>
<td>-12%</td>
<td>23%</td>
</tr>
<tr>
<td>8</td>
<td>-390%***</td>
<td>-11%</td>
<td>-18%*</td>
<td>18%</td>
</tr>
<tr>
<td>9</td>
<td>160%</td>
<td>41%</td>
<td>49%***</td>
<td>57%***</td>
</tr>
</tbody>
</table>

Note: ***, **, and * represent significance at the 1%, 5%, and 10% levels. Additionally, import and export regressions had an average $r^2 = .7$ while logged results had $r^2 = .85$.
Table 3: Average monthly change due to implementation of the Bahrain FTA

<table>
<thead>
<tr>
<th>Industry</th>
<th>Exports by US</th>
<th>Imports by US</th>
<th>Log exports</th>
<th>Log imports</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-361%***</td>
<td>333%***</td>
<td>31%***</td>
<td>209%***</td>
</tr>
<tr>
<td>1</td>
<td>614%***</td>
<td>-450%***</td>
<td>126%***</td>
<td>-25%</td>
</tr>
<tr>
<td>2</td>
<td>-401%</td>
<td>-25700%***</td>
<td>18%</td>
<td>-20%</td>
</tr>
<tr>
<td>3</td>
<td>-300%</td>
<td>-5149%</td>
<td>71%***</td>
<td>1%</td>
</tr>
<tr>
<td>4</td>
<td>-32757%***</td>
<td>-100%</td>
<td>-86%**</td>
<td>-20%</td>
</tr>
<tr>
<td>5</td>
<td>-553%</td>
<td>-42%</td>
<td>-1%</td>
<td>60%</td>
</tr>
<tr>
<td>6</td>
<td>-410%***</td>
<td>-32%</td>
<td>-25%***</td>
<td>-36%</td>
</tr>
<tr>
<td>7</td>
<td>-144%**</td>
<td>82%</td>
<td>35%***</td>
<td>130%***</td>
</tr>
<tr>
<td>8</td>
<td>-32%**</td>
<td>31%***</td>
<td>-13%</td>
<td>127%***</td>
</tr>
<tr>
<td>9</td>
<td>27%</td>
<td>-79%***</td>
<td>20%**</td>
<td>-106%***</td>
</tr>
</tbody>
</table>

Note: ***,*** and * represent significance at the 1%, 5% and 10% levels. Additionally, Imports and Exports had an average $r^2$ of .65 while logged results had $r^2=.7$.

Table 4: Average Monthly Trade (in thousands) by SITC industry

<table>
<thead>
<tr>
<th></th>
<th>Exports by US (Oman)</th>
<th>Imports by US (Oman)</th>
<th>Exports by US (Bahrain)</th>
<th>Imports by US (Bahrain)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1994</td>
<td>191.69</td>
<td>2459</td>
<td>84.36</td>
</tr>
<tr>
<td>1</td>
<td>190</td>
<td>0</td>
<td>267</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>759</td>
<td>4.7</td>
<td>193</td>
<td>13</td>
</tr>
<tr>
<td>3</td>
<td>582</td>
<td>53583</td>
<td>587</td>
<td>1341.82</td>
</tr>
<tr>
<td>4</td>
<td>466</td>
<td>1</td>
<td>4.86</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>6689</td>
<td>8142</td>
<td>2012</td>
<td>9391</td>
</tr>
<tr>
<td>6</td>
<td>3610</td>
<td>1366</td>
<td>2350</td>
<td>15087</td>
</tr>
<tr>
<td>7</td>
<td>62281</td>
<td>28.3</td>
<td>35642</td>
<td>105</td>
</tr>
<tr>
<td>8</td>
<td>5009</td>
<td>6121</td>
<td>48947</td>
<td>7298</td>
</tr>
<tr>
<td>9</td>
<td>3321</td>
<td>630.41</td>
<td>9030</td>
<td>9609</td>
</tr>
</tbody>
</table>

Table 5: SITC Industry Key

<table>
<thead>
<tr>
<th>Industry Code</th>
<th>Industry Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Food and Live Animals</td>
</tr>
<tr>
<td>1</td>
<td>Beverages and Tobacco</td>
</tr>
<tr>
<td>2</td>
<td>Crude materials except fuel</td>
</tr>
<tr>
<td>3</td>
<td>Mineral Fuels, Lubricants</td>
</tr>
<tr>
<td></td>
<td>Description</td>
</tr>
<tr>
<td>---</td>
<td>---------------------------------------------------</td>
</tr>
<tr>
<td>4</td>
<td>Animal and Vegetable Oils</td>
</tr>
<tr>
<td>5</td>
<td>Chemicals and related products</td>
</tr>
<tr>
<td>6</td>
<td>Manufactured goods by material</td>
</tr>
<tr>
<td>7</td>
<td>Machinery and Transport</td>
</tr>
<tr>
<td>8</td>
<td>Miscellaneous manufactured articles</td>
</tr>
<tr>
<td>9</td>
<td>Commodities and transactions not classified elsewhere</td>
</tr>
</tbody>
</table>
Bibliography


