To Sanction or not to Sanction:

An analysis of Iranian trade flows since UN Resolution 1929

Bachelor thesis Economics and Business Economics

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Introduction

In 1919 Woodrow Wilson, the president of the United States, infamously said: "A nation boycotted is a nation that is in sight of surrender. Apply this economic, peaceful, silent, deadly remedy and there will be no need for force. It is a terrible remedy. It does not cost a life outside the nation boycotted, but it brings pressure upon the nation that, in my judgment, no modern nation could resist".[1] While this may have been a fair expectation at the time, almost a hundred years later, it turns out that there is a bit more to it than previously thought.

Economic sanctions have been a means to solve quarrels between countries for centuries, even millennia.[2] Hufbauer and Schott (1990) in their ground-breaking work on sanctions mention 83 cases of sanctions being imposed on a country from the start of World War I until the moment they published their book in 1990. Given the frequency with which sanctions have been implemented in the past century, one would expect to find a clear consensus on their effectiveness. Hufbauer and Schott concluded that sanctions work approximately one-third of the time[3], but if sanctions go wrong, the effects can be catastrophic. The case of Iraq, where approximately 1.5 million Iraqis died as a direct result of sanctions makes this point abundantly clear[4].

Economic sanctions, to a higher or lesser degree, can be implemented for a number of reasons. They can be implemented out of discontent with a country's policy, to ask attention for human rights abuses or to destabilize a country's government. The most important question that needs to be answered is whether they are effective in ensuring these aims or not. Another, perhaps more important question is whether a government under sanctions is likely to change its policy and whether a government under sanctions is expected to lose political power. Marinov (2005) concluded that economic sanctions have a destabilizing effect indeed. [5] This is not guaranteed however. It appears that target countries of all shapes and sizes can withstand the pressure that sanctions bring with them.[6] Sometimes, like in the

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[1] Hufbauer, Gary C., Jeffrey Schott, and Ann Elliot. 1990. *Economic Sanctions Reconsidered.* Washington: Institute for International Economics: 9

[2] Tsebelis, George. (1990) 'Are Sanctions Effective? A Game-Theoretic Analysis'. *Journal of Conflict Resolution* 34(1):3-28

[3] Hufbauer & Schott (1990)

[4] Following Iraq's invasion of Kuwait (1990) and its subsequent defeat, the UN imposed the most stringent economic sanctions ever imposed on a country. These sanctions remained in place until the invasion of Iraq by NATO forces in 2003. During these 13 years approximately 1.5 million Iraqis were killed as a direct result of the "genocidal sanctions". For more information on the effects these sanctions have had on the nation of Iraq, see Hufbauer & Schott (1997), Katzman & Blanchard (2006), Dyson (2006), Al-Ani, Al-Hiali and Al-Farraji (2011), Al-Nasrawi (1994), Haddad (2004).

[5] Marinov, Nikolay. (2005) 'Do Economic Sanctions Destabilize Country Leaders?'. *American Journal of Political Science* 49(3):564–576.

[6] Hufbauer, Gary C. November 10, 1997 in an interview with Foreign Affairs (Transcript found on www.cfr.org)

cases of Iraq and Haiti, sanctions can actually strengthen a targeted regime and as a result increase its grip on society.[7]

The Islamic Republic of Iran is probably one of the best examples of a country that has been under U.S. sanctions for over three decades and that has more or less successfully defied them ever since. On the 7th of April 1980, in response to the ongoing hostage crisis involving US embassy personnel in Tehran, US president Carter imposed a programme of sanctions against Iran. Ten days later these sanctions were intensified and led to, among others, an export and import embargo (excluding food and medicine), the freezing of Iranian assets in the US and the banning of all financial transactions between US and Iranian citizens.[8] In 1995, the 'Comprehensive Iran Sanctions Act' was approved by the U.S. congress and forbade the US government to engage in business with any company doing business with Iran.[9] In 1996, the 'Iran and Libya Sanctions Act (ILSA), which prohibits companies from investing more than $40 million a year in Iran's oil and gas sector, was passed unanimously in Congress. A year later this was limited to $20 million. Any violation of this Act would result in severe consequences by the US government.[10]

The Sanctions Acts of 1995 and 1996 have not prevented the EU, Russia, Japan and countries neighbouring Iran from trading with and even investing in the Islamic Republic.[11] In fact, it was not until 9/11 and president Bush's subsequent speech declaring Iran to be part of the 'axis of evil' that the tone vis-à-vis Iran started to get harsher and only after 2005, following Mahmoud Ahmadinejad's election as president and the international community's growing concern with Iran's nuclear programme, that tensions between Iran and the West shifted towards the realm of global economic sanctions, mainly to prevent Iran from acquiring the financial resources to obtain a nuclear weapon, but with the explicit mentioning not to harm its citizens.[12]

This has resulted in more drastic measures having been taken with regards to Iran as of 2007.[13] Important to realize is that the EU and Japan, which had previously treated sanctions

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[7] Tripp, Charles. 'A history of Iraq'. Cambridge University Press 2007: 227-228; Dillin, John. May 16, 1996. 'Looking to '96, Quayle Faults Clinton Stance On Haiti Issue'. Christian Science Monitor

8 Congressional Research Service Report. 'The Iran Hostage Crisis: A Chronology of Daily Developments'. Prepared for Committee on Foreign Affairs U.S. House of Representatives. 97th Congress, 1st session, March 1981. Washington: U.S. Government Printing Office

[9] Hufbauer, Gary C., J. Schott., and A. Elliot. (2012) 'Chronology of key events US v. Iran (2006-: Proliferation)'. Peterson Institute for International Economics: 9; Kozhanov, Nikolay A (2011) U.S. economic sanctions against Iran: Undermined by external factors. *Middle East Policy* 18(3): 144–160.

[10] Ibid.

[11] Ibid.

[12] Maloney, Suzanne and Ray Takeyh. (2011) 'The Self-Limiting Success of Iran Sanctions'. *International Affairs* 87(6): 1297–1312

[13] See http://eeas.europa.eu/cfsp/sanctions/docs/measures_en.pdf for a list of EU sanctions against Iran. Current UN sanctions against Iran are linked to UNSC resolutions 1929 (2010), 1803 (2008), 1747 (2007) and 1737 (2006). They include a targeted arms embargo, travel sanctions, financial restrictions and the ban of exports related to uranium enrichment activities.

rather loosely, were determined to tighten their trade with Iran.[14] As of 2012 the EU is not importing any oil from Iran while previously it accounted for about 20% of Iranian oil exports.[15] Another, probably even more problematic aspect of EU sanctions is that European companies are no longer insuring oil shipments from and to Iran, whereas they previously insured 90% of these shipments.[16] As of October 2012, the EU prohibits any transaction with Iranian financial institutions, the import and transportation of natural gas from Iran and any export to Iran that has remotely to do with the energy sector.[17] Japan and South Korea have also taken similar stances in the fields of trade, banking and energy purchases.[18] China and India have not taken a similar stand against Iran and although imports from Iran have decreased reasonably, they have continued to import significant amounts of oil from Iran.[19] In 2012, Chinese crude oil imports from Iran equalled around $25 billion.[20]

All this causes one to question what the all-out effect of sanctions has been on Iran's export and import capabilities. Pape (1997) claims that sanctions against a government are expected to have little effect on that government's policy and if they are to have any effect, it is most likely to be the case in a relatively short time following implementation.[21] With the passing of time, the target country will find ways to evade sanctions and re-arrange domestic means of production in such a way that it produces many of the demanded products within its own borders, as has occurred in the case of Iran as well.[22] Iran's Supreme Leader, Ayatollah Khamenei has stated numerous times that the Iranian economy has transformed in a "resistance economy" over the past decade and that sanctions have in fact been beneficial to Iran in many areas.[23]

One would expect to see a heavy drop in import and export flows to and from Iran, as Security Council resolutions are binding for all nations. On top of this, there has been a significant number of countries that have imposed bilateral trade restrictions. This would mean that trade is expected to drop drastically if not almost completely. I will analyse

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[14] BBC, January 20, 2014. *Iran sanctions* http://www.bbc.com/news/world-middle-east-15983302
[15] Torbat, Akbar E. July 8, 2012. *EU Embargoes Iran over the Nuke Issue.* Information Clearing House.
[16] Ibid.
[17] Ibid.
[18] Ibid.
[19] Hornby, Lucy. February 7, 2012. *New sanctions on Iran constrict trade flows to Asia.* Reuters
[20] Sender, Henry. May 7, 2012. *Iran accepts Chinese renminbi for crude oil.* Financial Times.
[21] Pape, Robert. (1997) 'Why Economic Sanctions Do Not Work'. *International Security 22(2):90-136*
[22] Iran has been steadily advancing its research capabilities in the field of nanotechnology, biotechnology and pharmaceuticals. Iran is also aiming to become self-sufficient in gasoline output, whereas it was previously dependent on imports for 40% of its consumption. Also, in response to the embargo, Iran has developed a booming military industry, producing high quality military equipment including guided missiles, stealth submarines, tanks, guided missile destroyers, radar systems, fighter planes and most recently an advanced ballistic missiles programme was initiated. See reports of Global Research Centre for Research on Globalisation (2012), an article written by Ladane Nasseri for Bloomberg and a report by the U.S. Department of Defense (2012), in addition to of course Iranian sources.
[23] Sanctions have forced Iran to diversify its economy and as a result, Iran has therefore reduced its dependence on oil revenues and Iranian manufacturers are producing goods that previously had to be imported (Katzmann (2014): 52).

Iranian import and export flows in the light of the most recent and most far-reaching round of sanctions implemented by the Security Council, namely Resolution 1929. I hope this will illustrate the reaction of a number of Iran's most important trading partners vis-à-vis increasing pressure from the United States to squeeze Iran's energy sector and force it back to the negotiating table.[24] As oil exports accounted for 80% of Iran's exports and 50% of its government revenue in the past years[25], exports from Iran to other countries will be an excellent way of determining the effectiveness of the sanctions. Also this will enable me to directly link export and import capabilities to a possible decrease in government revenue and a subsequent decrease in its ability to carry out financial transactions necessary for their nuclear program. This will then allow me to answer the question 'to what extent the round of sanctions implemented in 2010 (UNSC Resolution 1929) has limited Iran's trade opportunities with other countries and consequently limited the financial abilities of its government'.

First I will discuss the most important literature on the topic of sanctions' efficacy, especially in the case of Iran. Secondly I will present the data I will use to tackle this problem and the methodology I will use. After that the results will be presented and extensively discussed. When doing this I will link the results to the academic literature as well as to the reaction of Iran's main trading partners in the past couple of years. Finally there will be some concluding remarks.

Related literature

The most ground-breaking work on economic sanctions has to be the study done by Hufbauer, Schott and Elliot (1990). Not only was it the first study on the subject that analysed all cases from 1914 till the moment of publishing, but it has since served as the most widely used dataset for evaluating sanctions programmes.[26] From their analysis they conclude that sanctions have a 34% success ratio. It also mentions a total of 'nine commandments' sanctions programs need to meet in order for them to be most likely to work[27]. These include among others that the target country is economically speaking much weaker than the sender country, that both countries have intensive economic trade with each other, that sender countries facing high costs will not be likely to participate and that the sender country attacks allies.[28] These requirements will be taken into account when analysing the case of Iran. Iran is not much weaker than its major trading partners, nor were

[24] Lakshmanan, Indira. March 30, 2012. '*US Lawmakers Target Iran's Energy Sector for Expanded Sanctions*'. Bloomberg.
[25] Habibi, Nader. (2008) 'The Iranian Economy in the Shadow of Economic Sanctions'. *Crown Center for Middle East Studies*. No. 31
[26] In nearly all of the publications that I have come across, the HSE dataset is used as the major dataset. See bibliography.
[27] Hufbauer & Schott (1990)
[28] Hufbauer & Schott (1990); Tsebelis (1990).

the main trading partners considered allies.[29] The EU for instance can be considered an ally of the sender country, the US, rather than Iran. For some countries the costs of imposing all-out sanctions or any form of trade restriction is very expensive, for instance for the United Arab Emirates, where dozens of companies are thriving solely due to trade with Iran.[30]

Pape (1997) however concluded not only that the 34% success ratio of Hufbauer and Schott is widely overestimated and that the actual success rate –whether one can consider a given sanctions episode a success is always a subject of debate- is closer to 6%, but also that in many cases regime or policy change is actually the result of something else and that sanctions played a negligible role in this.[31] Pape also concluded in the same study that if sanctions are to work, they are much more likely to work when implemented for a relatively short time; the longer they last, the more time the target country has to adapt to them and nullify the effect.[32] Sanctions are much more effective when they are implemented for a limited number of years and as a prelude to military intervention.[33] Based on this information, one would assume that if sanctions are not effective after a couple of years, they probably never will be.

This point is also addressed by Dizaji & van Bergeijk (2013) in a study in which they analyse potential early success and failure of economic sanctions against Iran. They conclude that the costs of sanctions exceed the benefits of lifting sanctions and that the social costs (i.e. costs for the local population) are often higher than expected. The deterioration in living conditions for ordinary Iranians will be higher than the improvement after sanctions have been lifted, so the effect for the people living under sanctions is negative. The costs for the Iranian government and subsequent pressure to return to the negotiating table is only significant during the first two years and turn negative after six or seven years[34], confirming the existing consensus that sanctions do not work in the long run. This is also in line with the expectations of Esfandiary & Fitzpatrick (2011: 147) that sanctions will not force Iran back to the negotiation table. On the contrary, Iran has been defying sanctions for over three decades and in the long run will prove to be immune to them.

Thompson (2011) and Kozhanov (2011) describe the 2010 sanctions package in more detail. They discuss the content of United Nations Security Council Resolution 1929, which targeted strategic sectors of the Iranian economy and more importantly strategic sectors to Iranian government revenue Furthermore its implications and the reaction of Iran's main trading partners is discussed. They also describe the response of U.S. partners and so called 'black knights', meaning countries that shrewdly viewed sanctions as a way to fill the void left

[29] Iran's GDP stood at 550 billion in 2010, making it the 21st largest economy on earth. See 'GDP and its breakdown at current prices in US Dollars'. United Nations Statistics Division. December 2013.
[30] Habibi, Nader. (2010) 'The Impact of Sanctions on Iran-GCC Economic Relations'. Crown Center for Middle East Studies. No. 45
[31] Pape (1997)
[32] Pape (1997)
[33] Pape (1997)
[34] Dizaji, Sajjad F. and Peter A G van Bergeijk. (2013) 'Potential early phase success and ultimate failure of economic sanctions: A VAR approach with an application to Iran'. *Journal of Peace Research* 50(6): 721-736

behind by companies from countries vowing to leave Iran's key sectors. These articles present a more or less similar view, namely that sanctions have been tightened by all countries, but that many have decided to stick only to the bare minimum required by the UNSC Resolution. On the bilateral level, they continue to maintain economic relations with Iran and continue to support lucrative business deals, evading the Resolution one way or another. As promising as this may have appeared at first, the reality of the situation is that the desired impact seems to be considerably less than was the original objective.

Marinov (2005) concluded that leaders who come under economic sanctions in a given year are significantly more likely to lose office than a leader who does not. [35] His argument is rather meaningless –most of the successes in his study were full democracies-, but even if we assume that this is true, this has not proven to be particularly true in the case of Iran, where the leadership has remained unchallenged for 35 years. Also, president Ahmadinejad was re-elected in 2009 after sanctions had been increased in severity.[36] Ahmadinejad's successor Rouhani has tempered his predecessor's harsh rhetoric and is increasingly seeking dialogue and diplomacy as a means to lift the restrictions imposed on Iran.[37]

Malloney (2010) describes what the reaction of Iran has been and illustrates that Iran is not as vulnerable as one would think and that effectively sanctioning Iran is dependent on the willingness of other countries to align with the U.S. and impose sanctions of their own in addition to the bare minimum laid out by Resolution 1929. It concludes that Iran is not nearly as isolated as it was in the 1980s and 1990s and that the challenge facing sanctioning states is to get a unilateral determination from Iran's major trade partners if sanctions against Iran are to be successful.[38]

Barkhordar & Saboohi (2013) conclude that it is in the long term interest of the Iranian economy and specifically in the sectors contributing most to GDP and GDP growth to physically invest a significant amount of oil revenues. They also state that Iran should invest in the oil industry in order to keep production levels equal to those of the past decade. Oil exports account for 80% of Iran's exports and account for 50% of its government budget and it is thus of vital importance to secure this cash flow for years to come.[39] Barkhordar & Saboohi also conclude that in the past decade because of Iran's production capacity and high oil prices, oil revenues quadrupled, reaching $70 billion in 2010.[40]

Barkhordar & Saboohi (2013) and Habibi (2008) further claim that reckless government spending, combined with mismanagement of oil revenues are the causes for Iran's current

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[35] Marinov (2005)

[36] BBC. June 13, 2009. '*Ahmadinejad wins Iran presidential election'.* http://news.bbc.co.uk/2/hi/middle_east/8098305.stm

[37] McElroy, Damien. August 3, 2013. *Hassan Rouhani vows to lift sanctions on Iran*. The Telegraph

[38] Maloney, Suzanne. (2010) 'Sanctioning Iran: If Only It Were So Simple' Centre for Strategic and International Studies *The Washington Quarterly*. January 2010. 33:1 pp. 131-147

[39] Barkhordar, Zahra A. and Yadollah Saboohi. (2013) 'Assessing alternative options for allocating oil revenue in Iran'. *Energy Policy*. 63: 1207-1216

[40] Ibid.

double digit inflation and its empty treasure chest, at a moment when this money is needed to secure the cash flow for years to come.[41] Had Iran invested this money, their economy would be in a completely different state. Habibi (2008) also states that if sanctions are to be implemented in a period of low oil prices, like the past couple of years and quite possibly the next couple of years, the consequences will be far more severe.

Special emphasis is placed on the way China and other Asian countries, Iran's main trading partners, have reacted. Depending on how these countries have reacted, one can explain and even predict, what the likely effect of sanctions will be. If India and especially China are on board and substantially limit their trade with Iran, then sanctions are much more likely to work. If not, then it seems that Resolution 1929 is just symbolic. It is important to realize that Resolution 1929 does not explicitly restrict energy investment or trade and China has seized the opportunity to become the only major buyer of Iranian oil and to secure huge oil fields that would otherwise have gone to Western companies.[42] India has also been reluctant to abandon Iran altogether and continues to purchase oil from and other oil related products to Iran.[43]

Katzman (2014) in a detailed report for the U.S. Congressional Research Service describes the way in which all most of the countries included in my analysis have complied with the sanctions and the effects the sanctions have had on Iran. It clearly sums up what the reaction of each individual nation has been vis-à-vis the sanctions and more importantly it explains the respective countries' motivations for doing so. It also helps interpreting the outcomes of the regressions conducted later on in this study and analyse the effect and impact on Iran and its trading partners. As it is the most recent study on the subject, it is of particular interest for my research.

The information above leads to a number of conclusions with regards to the effects of the latest round of sanctions against Iran, United Nations Security Council Resolution 1929. First of all, sanctions are very unlikely to have the desired effect (either policy change or regime change) and when they are expected to work, they tend to work in the years immediately following their implementation. This has been proven to be true in the case of Iran already by Dijazi & van Bergeijk. Also, there is a number of "commandments" introduced by Hufbauer & Schott (and further elaborated on by Tsebelis (1990) and Pape (1997) to name a few) that increase the likelihood of sanctions having the desired effect. It is questionable whether these apply in the case of Iran. The only thing this paper attempts to investigate is whether there has been an effect and to what extent it is hurting Iran's export and import

[41] During president Ahmadinejad's two terms as president, he used approximately $250 billion dollars on state loans to entrepreneurs and as subsidies on a number of basic commodities such as bread and gasoline. This resulted in a huge increase in the money supply triggering double digit inflation. See Barkhordar & Saboohi (2013) and Habibi (2008)

[42] Maloney, Suzanne and Erica Downs. (2011) 'Getting China to Sanctions Iran: The Chinese-Iranian Oil Connection' *Foreign Affairs March/April 2011*

[43] Kumaraswamy, P.R. (2013) 'India's Energy Dillema with Iran'. *South Asia: Journal of South Asian Studies.* Vol. 36, No. 2, 288–296

capabilities and as a result of that its government revenue. If there is an effect to begin with, this says nothing about the situation after a number of years after implementation.

Methodology and Data

In order to see whether sanctions against Iran have had any effect on its ability to import and export, I will use import and export data obtained from the UN Comtrade online database as dependent variables. This database provides data for a number of trade related variables for almost all countries on earth and for a significant number of years. On average this has provided me with 19 observations per country per variable over a period of 26 years. The data starts in 1988, with the end of the Iran-Iraq war and goes until 2013, the most recent year available.

I have used three independent variables that I think have been most influential on Iranian import and export flows. These include 'GDP', 'oil consumption' and 'distance'. I have obtained GDP data from the World Bank databank, data on oil consumption from indexmundi.com and I calculated the distance from Tehran to the countries' capitals online.[44]

For some countries there has been no data available for a number of years. Iraq for instance, given the economic situation the country was in until 2003, has only started to report such data after the ousting of Saddam Hussein.[45] The same is the case for Afghanistan. This applies for the pre-2000 period only, which means that for the past decade I have data for all countries and for almost all years. This is relevant, as it would be more meaningful to measure trade flows in the years directly preceding the sanctions. What happened 15 years before is rather irrelevant in my opinion.

Looking at the data there is a number of observations that should be mentioned beforehand. The first observation is that although the level of trade between Iran and its main trading partners has decreased considerably, it has definitely not come to a halt. The second thing which should be noted is that there is no apparent way to disconnect the two apparent effects. Finally it is worth saying that whether or not Iran has suffered from the embargo, in the years after Resolution 1929, the decrease in imports has been more than the decrease in exports. This remarkable achievement means that Iran has maintained a positive trade balance with its main trading partners, after having been subjected to yet another round of sanctions.

Iranian exports and imports to and from its main trading partners are the two dependent important variables in determining the possible effect of a trade embargo. The main sector

[44] To do this I used www.distancesfrom.com

[45] Baram, Amatzia., Ronen Zeidel and Achim Rohde. 2010. 'Iraq between occupations'. New York: Palgrave Macmillan: 189

targeted has always been the energy sector and as oil exports account for more than half of the Iranian government budget, a decrease in exports means a decrease in government revenue and a decrease in imports.[46]

I have constructed a number of dummy variables corresponding to the 'nine commandments' of Hufbauer and Schott, as described in the section above. The dummies I will include are therefore first of all a dummy to determine whether a country is an 'ally'. Countries with value 1 for this dummy are considered allies of the sender, thus allies of the U.S., who have aligned with the U.S. in severely restricting trade with Iran. Countries with value 0 are countries that are still more or less actively trading with Iran and are therefore considered no allies or limited allies. A further distinction is made to compare the reaction of EU countries with countries in East Asia. The EU has imposed strict sanctions of its own[47] and the same can be said for East Asia be it to a slightly lesser extent[48]. They have severely restricted trade with Iran and as a result of that have caused a serious blow to Iranian government revenue.

Finally a dummy has been added to separate the years preceding 2010 from the years following it. Note that Iran has been under sanctions for over three decades, but I will consider the pre-2010 sanctions as not intense and will therefore only use the year 2010 as the year of 'embargo'. The year 2010 has been a crucial one in the history of sanctions against Iran, as it was this year in which resolution 1929 was passed. Although relatively weak, this resolution targets specific sectors that are to be sanctioned.[49] It targets among others the oil, gas, petrochemical and banking sectors and labels them the most lucrative ones for government revenue.[50] This is why 2010 will serve as a possible turning point and why this year will be time dummy against which all previous years are measured. Observations in years previous to 2010 will have a dummy value of 0 and all years following 2010 will have value 1.

It should be noted however that for now there is no way of correcting for the effects of the economic situation after 2008. The effects can be caused by both the embargo, as well as the crisis. This may disturb the findings, but I will nevertheless analyse them in the light of Resolution 2010 and assume that as many countries had already reduced their trade volume with Iran in the years preceding 2010, the effect will be due to the embargo rather than due to the crisis. On top of that, 80% of Iran's exports consist of crude oil exports, which are not

[46] Habibi (2008)
[47] Council of the European Union (2012). See http://eeas.europa.eu/cfsp/sanctions/docs/measures_en.pdf for a list of EU sanctions against Iran
[48] Katzman, Kenneth. (2014) 'Congressional Research Service report on Iran Sanctions'. http://fas.org/sgp/crs/mideast/RS20871.pdf
[49] Kozhanov (2011) p.4
[50] Kozhanov (2011) p.4

very likely to shrink all too much, given the high share of exports to China and India, which have traditionally been major buyers of Iranian oil.[51]

I will construct a multiple regression model for the dependent variables exports and imports to see whether there has been a significant effect. First I will construct this using 'exports' as the dependent variable, followed by a model in which 'imports' are the dependent variable. I have decided to use the stepwise method, as this method allows one to look at the influence of each individual independent variable on the dependent variable.

The regression formula is as follows:

$$Y_t = \beta_0 + \beta_1 GDP_t + \beta_2 Oil\ Consumption_t + \beta_3 Distance + \varepsilon$$

In the first regression (model A) exports will be the dependent variable, whereas in the second regression (model B) the dependent variable will be imports.

Results

Dependent variable = Exports

Model Summary[e]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,628[a]	,395	,393	$2,468.345	
2	,649[b]	,422	,419	$2,415.247	
3	,682[c]	,466	,462	$2,323.787	
4	,690[d]	,476	,471	$2,304.182	,542

a. Predictors: (Constant), GDP
b. Predictors: (Constant), GDP, East_Asia_dummy
c. Predictors: (Constant), GDP, East_Asia_dummy, Distance
d. Predictors: (Constant), GDP, East_Asia_dummy, Distance, Oil_Comsumption
e. Dependent Variable: Exports

[51] Maloney & Downs (2011)

Coefficients[e]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-4,017	145,238		-,028	,978	-289,446	281,412					
	GDP	,002	,000	,628	17,125	,000	,001	,002	,628	,628	,628	1,000	1,000
2	(Constant)	-189,935	147,790		-1,285	,199	-480,382	100,511					
	GDP	,001	,000	,576	15,305	,000	,001	,002	,628	,586	,549	,909	1,100
	East_Asia_dummy	1272,549	277,669	,173	4,583	,000	726,857	1818,240	,346	,211	,164	,909	1,100
3	(Constant)	805,740	216,759		3,717	,000	379,749	1231,732					
	GDP	,002	,000	,639	16,969	,000	,001	,002	,628	,626	,586	,840	1,191
	East_Asia_dummy	2511,845	335,912	,341	7,478	,000	1851,686	3172,004	,346	,333	,258	,575	1,739
	Distance	-,367	,060	-,288	-6,086	,000	-,485	-,248	,187	-,276	-,210	,533	1,875
4	(Constant)	617,062	224,294		2,751	,006	176,260	1057,864					
	GDP	,001	,000	,491	7,811	,000	,001	,002	,628	,347	,267	,297	3,368
	East_Asia_dummy	2164,122	353,426	,293	6,123	,000	1469,540	2858,704	,346	,278	,210	,511	1,958
	Distance	-,368	,060	-,289	-6,155	,000	-,485	-,250	,187	-,280	-,211	,533	1,875
	Oil_Comsumption	,397	,135	,197	2,942	,003	,132	,662	,609	,138	,101	,261	3,827

a. Dependent Varble: Exports

Dependent variable = imports

Model Summary[d]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,495[a]	,245	,244	$1,516.89937	
2	,535[b]	,286	,283	$1,477.00492	
3	,552[c]	,305	,300	$1,458.85838	,472

a. Predictors: (Constant), GDP
b. Predictors: (Constant), GDP, Distance
c. Predictors: (Constant), GDP, Distance, Oil_Comsumption
d. Dependent Variable: Imports

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	410,942	90,455		4,543	,000	233,166	588,718					
	GDP	,001	,000	,495	11,972	,000	,001	,001	,495	,495	,495	1,000	1,000
2	(Constant)	916,842	133,924		6,846	,000	653,631	1180,053					
	GDP	,001	,000	,581	13,277	,000	,001	,001	,495	,535	,535	,848	1,179
	Distance	-,154	,031	-,219	-5,014	,000	-,215	-,094	,007	-,233	-,202	,848	1,179
3	(Constant)	841,985	134,030		6,282	,000	578,564	1105,406					
	GDP	,001	,000	,384	5,393	,000	,000	,001	,495	,249	,215	,312	3,207
	Distance	-,184	,032	-,261	-5,816	,000	-,246	-,121	,007	-,267	-,231	,788	1,268
	Oil_Comsumption	,282	,081	,256	3,466	,001	,122	,442	,455	,163	,138	,290	3,450

a. Dependent Variable: Imports

Discussion

A number of conclusions can be drawn when one looks at the results. There are 4 models for model A, where the fourth one has the most explanatory power, but also the model for which the highest number of variables is significant. This model has an (Adjusted) R Square of about 47%, indicating that 47% of the total variability in exports is explained. Though this may not seem very high, one has to consider that we are dealing with a very complex situation. Exports under embargo have many components of which GDP, oil consumption and distance are but a few. Nevertheless they manage to explain 47% of exports from Iran to the rest of the world. For imports, the (Adjusted) R Square is relatively low as only 30% of Iranian imports are explained by these three variables. This is also not surprising, because Iranian imports have less to do with the exporting country's oil consumption.

Attention also goes out to the Durbin-Watson statistic, which is ,542 in model A and ,472 in model B. Now this poses a bit of a problem as it indicates serial correlation. A Durbin-Watson statistic of between 1,5 and 2,5 indicates that there is no serial correlation, but in both cases it is well below that interval. This is of particular importance as one of the assumptions of regression is that there is no serial correlation. One of the implications of serial correlation for this model is that I have left out an important variable that would be very helpful in determining or influencing the dependent variables exports and imports. This could also lead to a distortion of R Square.

One can consider the sudden implementation of severe sanctions a sort of supply shock, for instance on the global market for crude oil, leading to a distortion of the existing equilibrium. It might take some time for this equilibrium to adjust and for the time being serial correlation can occur.

A remarkable feature of the stepwise method when conducting a multiple regression model is that only the significant variables are included in the model. As can be seen, it has left out the EU dummy, the Ally dummy and the Embargo dummy. Apparently only the East Asia dummy is relevant for the analysis and adding other dummies does not add to the explanatory power of the model. In model B, the East Asia dummy is not even included, meaning that it did not have any additional explanatory power. This tells us that for the results of this regression, being an ally of the U.S. or not does not add anything to the level of imports or exports from and to Iran. The same can be said for the other two dummies. This does not mean that there is absolutely no relation between the dummies and the level of imports or exports, but the effect is not strong enough to be taken into account in the model.

Looking at the coefficients again, there are four models for model A and three for model B. I shall merely focus on the last models, being model 4 for A and model 3 for B, as they have the highest number of relevant explanatory variables, all being significant. For the regression with dependent variable exports there exists a positive relationship between GDP and

exports and oil consumption and exports. There exists a negative relationship between the distance between countries and Iranian exports. This does not come as a surprise. As GDP increases, more money becomes available within the country and as a result the country is able to import from the rest of the world. The coefficient of ,001 indicates that a GDP increase of 1,000 will result in an increase of Iranian exports to this country by 1. GDP is measured in billions of dollars, meaning that a GDP increase of 1 billion would lead to an increase of Iranian exports to this country consisting of $1,000,000.[52] For the dependent variable oil consumption, which is measured in millions of barrels of oil per day, this means that if oil consumption in a given country increases by 1 barrel, exports to this country would increase by $0,397. In macroeconomic terms, if a given country increases its oil consumption with 1 million barrels of oil, Iranian exports to this country would increase by $3,970.[53] Note that even though crude oil exports accounted for 80% of total exports in the past years, this number refers to total exports and can include other exports as well.

The variable distance, which has a negative coefficient and is measured in kilometres, means that for every extra kilometre a given country is located further away from Iran, exports from Iran to this country tend to decrease by 0,368, a sort of distance barrier if you will. This is simply a way to prove that countries tend to trade more with their neighbours, a point which is addressed in numerous papers I have described above. It should be stated however that Iran is a large country and Asia in general, is a vast continent covering huge distances. One should take into consideration that 17 out of the 26 countries in the sample are located in Asia, and also a nation such as Canada, with which trade has practically come to a standstill is included in the sample, which may distort the results to some extent.

The distance effect is strengthened when a nation is under sanctions, as it becomes more difficult to avoid certain trade restrictions. European companies, which previously insured 90% of all oil shipments to and from Iran, are no longer allowed to do so. Because of this the Iranian government had to secure oil shipments by Iranian vessels and these costs tend to increase considerably with distance. Hassan Rouhani, former nuclear negotiator and current president of Iran has estimated that these restrictions have resulted in a 10 to 30 percent increase in costs.[54] It has even caused the Japanese government to guarantee insurance on Iranian vessels transporting crude oil to Japan.[55] When a country located in East Asia is willing to insure oil shipments coming from a sanctioned country, one can begin to wonder if sanctions are having any effect at all.

Looking at the dataset, it becomes obvious that as sanctions intensified, trade between Iran and its neighbours has increased the most. In the past decade, trade between Iran and Turkey, the UAE, Iraq, Azerbaijan and Armenia has increased considerably. This observation

[52] Given that all other factors remain unchanged (ceteris paribus)
[53] Oil consumption is measured in millions of barrels of oil per day, however I entered all my data in thousands, so the coefficient has to be multiplied by a factor of 1000.
[54] Maloney (2010)
[55] Torbat (2012)

however is overshadowed with the conclusion drawn from the East Asia dummy. The East Asia dummy has a coefficient of 2164,122 and would imply an increase in exports of on average $2,164,122,000 if a certain country is located in East Asia. This goes against the conclusions derived from the distance coefficient, which states that the further a country is, the less trade will take place. East Asia however includes some of Iran's primary and most lucrative trading partners making it particularly interesting for Iran to trade with these countries, rather than with countries that are located in their vicinity, especially given the fact that neighbouring countries are not major importers of crude oil, whereas East Asian countries are.[56]

First of all, East Asia is one of the fastest growing regions in the world, economically speaking.[57] China, Japan and South Korea are heavily dependent on Iranian oil and cannot afford to cut off trade with Iran altogether, although considerable reductions have occurred.[5859] China supports UN sanctions, but has not taken any additional measures to restrict trade with Iran. It has continued to maintain its economic ties with Iran in order to secure its energy security, as it does not have a direct alternative to compensate for the 500,000 barrels of oil it imports from Iran every day, totalling 16 percent of China's oil exports.[60] Japan in its turn is dependent on Iran for 6 percent of its total oil supply, equalling 265,000 barrels per day.[61] South Korea has enforced its own sanctions against Iran, on top of UN sanctions, but these seem to be rather symbolic. Ironically enough, they function as ways to create loopholes for intensifying economic relations between Seoul and Teheran.[62]

The apparent double standards in the way these countries have dealt with UN Resolution 1929 can best be illustrated with reference to the 'oil for yuan' and 'oil for won' deals.[6364] In a very crafty way, China and South Korea have kept economic relations lubricated by allowing Iran to store payments for crude oil shipments in Chinese and South Korean bank accounts. This has two advantages. First of all, the payments are made in yuan and won, instead of dollars. By doing this, China and South Korea do not have to touch upon their foreign exchange reserves nor do they have to turn to international financial markets and convert their domestic currencies into dollars. At the same time, Iranian 'assets' are now deposited in Chinese and Korean bank accounts and can be used for Iranian imports from

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[56] List of Top World Oil Net Importers, 2012. U.S. Energy Information Administration. http://www.eia.gov/countries/index.cfm?topL=imp

[57] Boumphrey, Sarah. March 17, 2014. *Asia-Pacific: Set to Become the World's Fastest-Growing Region for 10 Years Running.* Euromonitor International.

[58] Bozorgmehr, Najmeh. and Ben McLannahan. May 21, 2012. *Japan's oil importers seek Iran solution.* Financial Times.

[59] Kozhanov (2011)

[60] Ibid.

[61] Bozorgmehr, Najmeh. and Ben McLannahan. May 21, 2012. *Japan's oil importers seek Iran solution.* Financial Times

[62] Kozhanov (2011)

[63] Ibid.

[64] Garver, John. (2013) 'China-Iran Relations: Cautious Friendship with America's Nemesis. *China Report 2013 49(1): 69-88*

these countries. This is beneficial for Iran as a number of steps for evading sanctions do not have to be undertaken anymore and it is beneficial for Asian countries as they are guaranteed to get the money back.[65] It is of particular interest for Sino-Iranian relations, as these accounts also serve as a means of paying for many major construction projects in Iran carried out by Chinese firms.[66] These in their turn do not fall under imports, but are domestic projects carried out by foreign firms. The South Korean government has even gone as far as to help companies that come under sanctions by the U.S. because of their involvement with Iran.[67]

Looking at the coefficients of model B, with imports as dependent variable, it is striking that the coefficient for GDP is again ,001. When the GDP of one of Iran's trading partners increases by $1,000,000,000 this leads to an increase in Iranian imports from that country of $1,000,000. It appears that the relation between the GDP of one of Iran's trading partners and Iranian exports to that country is the same as the relation between the GDP of a trading partner and Iranian imports from that country.

The coefficient for distance is negative, like it was in model A, but the beta of the coefficient is cut in half. In model A, the coefficient has a beta of -,368, whereas in model B the coefficient has a value of -,184. The relation between the distance and imports from a country is therefore only half as strong as the relation when it comes to exports.

The relationship between oil consumption and imports is significant and positive, but the coefficient is smaller than it was in model A. When oil consumption in a country goes up by 1 million barrels, imports from that country increase by $2820.

Looking at the significance levels, it suffices to say that all variables included in both models have significance levels smaller than 0.01 and are therefore all significant at the 99% level. This means that there is very strong evidence to reject the null hypothesis that the models have no explanatory power for both models and as a result all coefficients have predictive ability.

One of the questions that remains to be answered is why the ally dummy and the EU dummy are not statistically relevant for the regression. One of the reasons may very well have to do with the fact that the term 'ally' is used rather loosely here. When classifying the countries under the banner of ally or not, I looked at a number of factors. First, I looked at the political process in the years preceding Resolution 1929. There was a number of countries, among others China and Russia, that were not very keen to support sanctions against Iran, as they did not consider it to be effective and even counterproductive.[68] Until this day, the policy of China and Russia is to strictly impose the sanctions required by Resolution 1929, nothing

[65] A similar agreement exists between the Islamic Republic of Iran and India, where India purchases crude oil with rupees and the IRI deposits these rupees on an Indian bank account. See Kumaraswamy (2013).
[66] Kumaraswamy (2013)
[67] Kozhanov (2011)
[68] Habibi (2008)

more and nothing less.[69] Other countries, including EU countries and countries in East Asia, vowed to strictly uphold sanctions and even impose sanctions of their own, as did South Korea for example.[70] Based on their attitude in the years before Resolution 1929 was passed and their subsequent attitudes vis-à-vis sanctions against Iran, I have either labelled them allies or not.

Later it turned out that countries that are considered to be allies in theory, are in practise still heavily involved in lucrative business deals with the Islamic Republic of Iran, making it questionable whether these countries actually intended on cutting back on their trade with Iran or not.[71] Many countries are simply too dependent on Iran for their crude oil imports and as a result cannot afford to completely close the door on Iran. Until alternative oil supplies are guaranteed, their attitude with regards to Iran will remain unchanged.[72]

Then there is the question why the EU dummy has not proven to be a significant factor in the regression, even though the European Union has proven to be the U.S.'s most reliable partner in sanctioning Iran.[73] I have decided to conduct another statistical experiment, by letting the EU dummy interact with the embargo dummy. The effect of the embargo dummy on the EU countries is the sum of the embargo dummy coefficient and the interaction coefficient. The sum of these coefficients should be negative, as my data clearly show a decrease in Iranian exports to and imports from the EU. In doing so, I will leave out the individual EU and East Asia dummy and add the EUxEmbargo and East_AsiaxEmbargo dummies instead, in order to prevent perfect multicollinarity.

These regressions, of which the results are included in appendix B (appendix A contains additional statistics of the previous analysis) show no significant effect of the EUxEmbargo dummy. For model A, the EUxEmbargo dummy is only significant in model 1 and only at the 90% significance level. For model B with dependent variable imports, the EUxEmbargo dummy is significant in none of the models. The East_AsiaxEmbargo dummy is significant at the 99% significance level for all models in either model A or B. From this follows that there is no statistical evidence that trade between East Asia and Iran has suffered a serious blow after Resolution 1929 has been implemented.

On March 20, 2012 a group of 11 European countries was awarded for having significantly reduced oil imports from Iran. 17 other EU countries were not awarded as they had not been buying Iranian oil in the first place and could therefore not 'significantly reduce' Iranian oil purchases.[74] Although the data collected for this study clearly show a decrease in trade volume between the EU and the Islamic Republic of Iran, this trend started in the years preceding Resolution 1929. Hence, there is no statistical evidence to support the claim that

[69] Katzman, Kenneth. (2011) 'Iran Sanctions'. Congressional Research Service Report.
[70] Katzman (2014)
[71] Kozhanov (2011)
[72] Garver (2013)
[73] Katzman (2014)
[74] Ibid.

bilateral sanctions imposed by the EU after Resolution 1929 have had a significant effect on Iranian imports or exports from or to the EU.

Resolution 1929 targeted two main sectors of the Iranian economy, namely the energy sector and the banking sector.[75] The U.S. government had been sanctioning countries whose companies were involved in serious business contracts with Iran's energy and banking sector since the passing of the Iran and Libya Sanctions Act of 1996.[76] The data I have used and subsequently the regression that I have conducted do not provide any information about the current state of Iran's banking sector, but I consider it to be relevant for my analysis and shall therefore refer to it briefly.

In addition to Resolution 1929, the U.S. government again promised to ban banks that engage in business with Iran from the American financial system, making it de facto obligatory for banks to take a side in the conflict.[77] Banks that engage in business with sanctioned states also risk huge financial penalties imposed by the U.S. treasury, as has the case for a number of European banks.[78] In addition to European banks having been actively involved in carrying out financial payments on behalf of sanctioned states like Iran, there are also a number of Chinese and Russian banks carrying out very lucrative financial transactions for the Iranian government.[79] The 'oil for yuan' and 'oil for won' deals between Iran and China and Iran and South Korea respectively, as well as the Chinese and Russian diversions from Resolution 2010 illustrate the inability the U.S. experiences in hindering payments and trade opportunities for the Islamic Republic. It remains to be seen whether Resolution 1929 and its aftermath have really made matters worse for the Iranians, or whether those aiming to target Iran's leadership are just running after the facts.

Conclusion

One may conclude that Resolution 1929, adopted by the United Nations Security Council on June 9, 2010, has not significantly reduced Iran's ability to trade and has not resulted in a significant decrease of trade flows between Iran and its main trading partners. In the first place, this is caused by the relatively weak content of Resolution 1929, which targets specific sectors of the Iranian economy, but does not call for aggressive action and basically allows each member state to decide for itself whether it wants to impose further bilateral sanctions or not. On the other hand this is caused by the lack of serious commitment of Iran's major trading partners in squeezing its energy sector and forcing Iran back to the negotiating table. However, in this paper I have merely looked at Iran's ability to trade with the rest of the

[75] Thompson (2011)
[76] See introduction
[77] Strowmatt, Shane., Fabio Benedetti and Sonia Sirletti. July 1, 2014. *'BNP's 8.97 Billion U.S. Fine Sets Bar for European Banks'.* Bloomberg.
[78] Ibid.
[79] Russel, Walter. May 9, 2012. '*Iran And Russia Macgyver A Way Around US Sanctions'.* The American Interest.

world and no significant proof has been found that suggests that the aftermath of Resolution 1929 has been successful in accomplishing this aim.

The Islamic Republic of Iran has been able to trade with its main trading partners at a lower level than before, but has not been completely prevented from exporting and importing and conducting trade related financial transactions. The regions that have been especially beneficial for Iran's post-2010 trade is the region of East Asia, home to some of the most important buyers of Iranian crude oil. South Korea, China and Japan are the countries that have continued to purchase huge quantities of Iranian oil, though less than in the years before 2010. Iran has in turn rewarded some of these countries for their loyalty by granting them lucrative contracts in Iran's domestic energy sector.

It has to be said that sanctions formulated in Resolution 1929 have definitely had an effect on Iran's trade flows. Transportation and insurance costs have increased between 10 and 30 percent. Trade has been complicated and the level of trade has declined. This in turn has caused Iran to adopt the notion of resistance economy and has strengthened Iran in several sectors of its economy.

There have been some problems, especially in Iran's ability to attract foreign capital in order to keep crude oil production at the level of the past few years. Also it has proven to be more expensive to carry out and receive payments and to insure crude oil shipments. In the light of all this it is all the more impressive to see that although many of the 26 countries that I analysed show a steep drop in trade with Iran, Iran's most important trading partners have not drastically reduced their imports from Iran. It is also surprising to see that Iranian imports from these countries have decreased. This is in the benefit of the Iranians, who have managed to maintain a positive trade balance during what many perceive to be the most stringent round of sanctions imposed against Iran so far.

The consensus within academic literature on the efficacy of sanctions is that sanctions are not very likely to work, but if they are to work, they tend to work in the years immediately after implementing them. Looking at the situation of Iran a number of years after Resolution 1929, it appears that Iran is for the time being handling the embargo fairly properly. The global economy has been in a situation of crisis for the past 5 years and Iran has not performed particularly disappointing. Note that the past five years have been characterized by low oil prices and a stagnation in global demand, but Iran has managed to keep its head above the water after yet another round of sanctions. There is however no way to distinguish between possible effects of Resolution 1929 and the effects the global financial crisis have had on global demand. It could very well be that the crisis accounts for a partial decline in trade in addition to Resolution 1929.

Further research should analyse the situation in years to come, in order to see whether the reaction of Iran's main trading partners vis-à-vis Iran has changed. Furthermore, a similar analysis with more relevant variables will provide more insights into the determinants of

actual trade flows between Iran and the rest of the world. It would also be interesting to see what the effects of the recently imposed sanctions on Russia[80] are and how this has changed the global market for crude oil, Russia also being a major oil exporter.[81] It is possible that Russia and Iran will form a new block and that the attitude of certain countries towards the U.S. or Iran and Russia will change.

Bibliography

Annual Report on Military Power of Iran. April 2012. U.S. Department of Defense. http://fas.org/man/eprint/dod-iran.pdf

Barkhordar, Zahra A. and Saboohi, Yadollah. (2013). 'Assessing alternative options for allocating oil revenue in Iran'. *Energy Policy*. 63: 1207-1216

BBC. 13 June 2009. *Ahmadinejad wins Iran presidential election.* http://news.bbc.co.uk/2/hi/middle_east/8098305.stm

BBC, 2014. *Iran sanctions.* http://www.bbc.com/news/world-middle-east-15983302

Boumphrey, Sarah. March 17, 2014. *Asia-Pacific: Set to Become the World's Fastest-GrowingRegion for 10 Years Running.* Euromonitor International.

Bozorgmehr, Najmeh. and Ben McLannahan. May 21, 2012. *Japan's oil importers seek Iran solution.* Financial Times

Congressional Research Service Report. '*The Iran Hostage Crisis*: *A Chronology of Daily Developments*'. Prepared for Committee on Foreign Affairs U.S. House of Representatives. 97th Congress, 1st session, March 1981. Washington: U.S. Government Printing Office. (Downloaded from Peterson Institute of International Economics).

Dillin, John. May 16 1994. 'Looking to '96, Quayle Faults Clinton Stance On Haiti Issue'. Christian Science Monitor

Dizaji, Sajjad F., and Peter A G van Bergeijk. (2013) 'Potential early phase success and ultimate failure of economic sanctions: A VAR approach with an application to Iran'. *Journal of Peace Research* 50(6): 721-736

Esfandiary, Dina & Mark Fitzpatrick (2011) 'Sanctions on Iran: Defining and enabling 'success''. *Survival: Global Politics and Strategy* 53(5): 143–156.

Garver, John. (2013) 'China-Iran Relations: Cautious Friendship with America's Nemesis. *China Report 2013 49(1): 69-88*

[80] Gollom, Mark. August 7, 2014. '*Are sanctions on Russia beginning to bite?*' CBC news
[81] Russia Report. March 12, 2014. U.S. Energy Information Administration. http://www.eia.gov/countries/cab.cfm?fips=rs

Global Research Centre for Research on Globalization. January 15, 2012. 'Iran's military Capabilities: Iran could attack US Military Facilities'. http://www.globalresearch.ca/iran-s-military-capabilities-iran-could-attack-us-military-facilities-asymmetric-warfare-russian-defense-analyst/28668

Gollom, Mark. August 7, 2014. 'Are sanctions on Russia beginning to bite?' CBC news

Habibi, Nader. (2008) 'The Iranian Economy in the Shadow of Economic Sanctions'. Crown Center for Middle East Studies. No. 31

Habibi, Nader. (2010) 'The Impact of Sanctions on Iran-GCC Economic Relations'. Crown Center for Middle East Studies. No. 45

Hornby, Lucy. February 7 2012. *New sanctions on Iran constrict trade flows to Asia.* Reuters

Hufbauer, Gary C., J. Schott., and A. Elliot. 1990. *Economic Sanctions Reconsidered.* Washington: Institute for International Economics

Hufbauer, Gary C., J. Schott., and A. Elliot. (2012) 'Chronology of key events US v. Iran (2006-: Proliferation)'. Peterson Institute for International Economics. http://www.iie.com/publications/papers/sanctions-iran-84-1_2006-1.pdf

Katzman, Kenneth. (2014) 'Congressional Research Service report on Iran Sanctions'. http://fas.org/sgp/crs/mideast/RS20871.pdf

Kozhanov, Nikolay A. (2011) 'U.S. economic sanctions against Iran: Undermined by external factors'. *Middle East Policy* 18(3): 144–160.

Kumaraswamy, P.R. (2013) 'India's Energy Dillema with Iran'. *South Asia: Journal of South Asian Studies.* Vol. 36, No. 2, 288–296

Lakshmanan, Indira. March 30, 2012. *US Lawmakers Target Iran's Energy Sector for Expanded Sanctions*. Bloomberg.

Maloney, Suzanne. (2010) 'Sanctioning Iran: If Only It Were So Simple'. Centre for Strategic and International Studies *The Washington Quarterly*. 33(1): 131-147

Maloney, Suzanne and Erica Downs. (2011) 'Getting China to Sanctions Iran: The Chinese-Iranian Oil Connection' *Foreign Affairs* March/April 2011

Maloney, Suzanne and Ray Takeyh. (2011) 'The Self-Limiting Success of Iran Sanctions'. *International Affairs* 87(6): 1297–1312

Marinov, Nikolay (2005) 'Do economic sanctions destabilize country leaders?'. *American Journal of Political Science* 49(3): 564–576.

McElroy, Damien. August 3 2013. *Hassan Rouhani vows to lift sanctions on Iran*. The Telegraph

Pape, Robert. (1997) 'Why Economic Sanctions Do Not Work'. *International Security 22(2):90-136*

Russel, Walter. May 9, 2012. '*Iran And Russia Macgyver A Way Around US Sanctions'.* The American Interest.

Russia Report. March 12, 2014. U.S. Energy Information Administration. http://www.eia.gov/countries/cab.cfm?fips=rs

Sender, Henry. May 7 2012. *Iran accepts Chinese renminbi for crude oil.* Financial Times

Strowmatt, Shane., Fabio Benedetti and Sonia Sirletti. July 1, 2014. *'BNP's 8.97 Billion U.S. Fine Sets Bar for European Banks'.* Bloomberg.

Torbat, Akbar E. July 08, 2012. *EU Embargoes Iran over the Nuke Issue.* Information Clearing House.

Thomson, Reagan. (2011) 'The effectiveness of the Fourth Round of Sanctions against Iran'. *Stanford Journal of International Relations.* Vol.XIII(1):6-15

Tsebelis, George. (1990) 'Are Sanctions Effective? A Game-Theoretic Analysis'. *Journal of Conflict Resolution* 34(1):3-28

Tripp, Charles. 2007. A history of Iraq. Cambridge University Press

U.S. Energy Information Administration. List of Top World Oil Net Importers, 2012. http://www.eia.gov/countries/index.cfm?topL=imp

Appendix A

Model A (dependent variable = exports)

Descriptive Statistics

	Mean	Std. Deviation	N
Exports	$1,490.33	$3,168.761	452
GDP	$920,688.0531	$1,226,330.87397	452
Oil_Comsumption	1590,4580	1573,89071	452
Distance	3948,0310	2486,52263	452
EU_dummy	,2478	,43221	452
East_Asia_dummy	,2434	,42959	452
Ally_dummy	,8075	,39468	452

Correlations

		Exports	GDP	Oil_Comsumption	Distance	EU_dummy	East_Asia_dummy	Ally_dummy
Pearson Correlation	Exports	1,000	,628	,609	,187	-,093	,346	-,034
	GDP	,628	1,000	,828	,396	,077	,302	,095
	Oil_Comsumption	,609	,828	1,000	,459	-,145	,469	-,092
	Distance	,187	,396	,459	1,000	,013	,650	,282
	EU_dummy	-,093	,077	-,145	,013	1,000	-,326	,280
	East_Asia_dummy	,346	,302	,469	,650	-,326	1,000	,015
	Ally_dummy	-,034	,095	-,092	,282	,280	,015	1,000
Sig. (1-tailed)	Exports	.	,000	,000	,000	,024	,000	,233
	GDP	,000	.	,000	,000	,052	,000	,022
	Oil_Comsumption	,000	,000	.	,000	,001	,000	,025

		Distance	,000	,000	,000	.	,395	,000	,000
		EU_dummy	,024	,052	,001	,395	.	,000	,000
		East_Asia_dummy	,000	,000	,000	,000	,000	.	,373
		Ally_dummy	,233	,022	,025	,000	,000	,373	.
		Exports	452	452	452	452	452	452	452
		GDP	452	452	452	452	452	452	452
		Oil_Comsumption	452	452	452	452	452	452	452
N		Distance	452	452	452	452	452	452	452
		EU_dummy	452	452	452	452	452	452	452
		East_Asia_dummy	452	452	452	452	452	452	452
		Ally_dummy	452	452	452	452	452	452	452

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1786784665,203	1	1786784665,203	293,265	,000[b]
	Residual	2741727821,352	450	6092728,492		
	Total	4528512486,555	451			
2	Regression	1909307871,004	2	954653935,502	163,653	,000[c]
	Residual	2619204615,551	449	5833417,852		
	Total	4528512486,555	451			
3	Regression	2109318437,649	3	703106145,883	130,205	,000[d]
	Residual	2419194048,906	448	5399986,716		
	Total	4528512486,555	451			
4	Regression	2155275377,910	4	538818844,478	101,487	,000[e]
	Residual	2373237108,645	447	5309255,277		

Total	4528512486,555	451			

a. Dependent Variable: Exports
b. Predictors: (Constant), GDP
c. Predictors: (Constant), GDP, East_Asia_dummy
d. Predictors: (Constant), GDP, East_Asia_dummy, Distance
e. Predictors: (Constant), GDP, East_Asia_dummy, Distance, Oil_Comsumption

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	Oil_Comsumption	,282[b]	4,403	,000	,203	,314	3,181	,314
	Distance	-,073[b]	-1,843	,066	-,087	,843	1,186	,843
	EU_dummy	-,142[b]	-3,913	,000	-,182	,994	1,006	,994
	East_Asia_dummy	,173[b]	4,583	,000	,211	,909	1,100	,909
	Ally_dummy	-,095[b]	-2,589	,010	-,121	,991	1,009	,991
2	Oil_Comsumption	,195[c]	2,793	,005	,131	,261	3,827	,261
	Distance	-,288[c]	-6,086	,000	-,276	,533	1,875	,533
	EU_dummy	-,094[c]	-2,438	,015	-,114	,860	1,162	,787
	Ally_dummy	-,093[c]	-2,582	,010	-,121	,991	1,009	,901
3	Oil_Comsumption	,197[d]	2,942	,003	,138	,261	3,827	,261
	EU_dummy	-,034[d]	-,886	,376	-,042	,796	1,257	,460
	Ally_dummy	-,022[d]	-,594	,553	-,028	,872	1,147	,469
4	EU_dummy	-,004[e]	-,092	,927	-,004	,736	1,358	,242
	Ally_dummy	,018[e]	,467	,641	,022	,764	1,310	,229

a. Dependent Variable: Exports
b. Predictors in the Model: (Constant), GDP
c. Predictors in the Model: (Constant), GDP, East_Asia_dummy
d. Predictors in the Model: (Constant), GDP, East_Asia_dummy, Distance
e. Predictors in the Model: (Constant), GDP, East_Asia_dummy, Distance, Oil_Comsumption

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions				
				(Constant)	GDP	East_Asia_dummy	Distance	Oil_Comsumption
1	1	1,601	1,000	,20	,20			
	2	,399	2,003	,80	,80			
2	1	2,068	1,000	,10	,10	,10		
	2	,533	1,970	,20	,13	,89		
	3	,399	2,278	,70	,77	,00		
3	1	2,937	1,000	,02	,04	,03	,02	
	2	,533	2,347	,09	,12	,57	,00	
	3	,432	2,607	,16	,81	,00	,02	
	4	,098	5,467	,73	,03	,40	,96	
4	1	3,761	1,000	,01	,01	,02	,01	,01
	2	,562	2,586	,00	,10	,39	,01	,02
	3	,492	2,766	,24	,06	,14	,03	,02
	4	,110	5,847	,35	,15	,13	,69	,24
	5	,075	7,081	,39	,68	,33	,26	,71

a. Dependent Variable: Exports

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-$1,473.14	$13,547.36	$1,490.33	$2,186.065	452
Residual	-$6,166.994	$16,785.639	-$0.000	$2,293.941	452
Std. Predicted Value	-1,356	5,515	,000	1,000	452
Std. Residual	-2,676	7,285	,000	,996	452

a. Dependent Variable: Exports

Model B (dependent variable = imports)

Descriptive Statistics

	Mean	Std. Deviation	N
Imports	$1,065.3318	$1,744.09555	443
GDP	$935,094.8081	$1,234,283.78670	443
Oil_Comsumption	1598,8352	1584,07091	443
Distance	4006,5124	2476,69421	443
EU_dummy	,2528	,43512	443
East_Asia_dummy	,2483	,43252	443
Ally_dummy	,8126	,39064	443

Correlations

		Imports	GDP	Oil_Comsumption	Distance	EU_dummy	East_Asia_dummy	Ally_dummy
Pearson Correlation	Imports	1,000	,495	,455	,007	-,060	,096	-,049
	GDP	,495	1,000	,830	,389	,070	,297	,087
	Oil_Comsumption	,455	,830	1,000	,460	-,149	,470	-,107
	Distance	,007	,389	,460	1,000	-,001	,648	,272
	EU_dummy	-,060	,070	-,149	-,001	1,000	-,334	,279
	East_Asia_dummy	,096	,297	,470	,648	-,334	1,000	,008
	Ally_dummy	-,049	,087	-,107	,272	,279	,008	1,000
Sig. (1-tailed)	Imports	.	,000	,000	,444	,104	,021	,151
	GDP	,000	.	,000	,000	,069	,000	,033
	Oil_Comsumption	,000	,000	.	,000	,001	,000	,012

		Distance	,444	,000	,000	.	,492	,000	,000
		EU_dummy	,104	,069	,001	,492	.	,000	,000
		East_Asia_dummy	,021	,000	,000	,000	,000	.	,432
		Ally_dummy	,151	,033	,012	,000	,000	,432	.
		Imports	443	443	443	443	443	443	443
		GDP	443	443	443	443	443	443	443
		Oil_Comsumption	443	443	443	443	443	443	443
N		Distance	443	443	443	443	443	443	443
		EU_dummy	443	443	443	443	443	443	443
		East_Asia_dummy	443	443	443	443	443	443	443
		Ally_dummy	443	443	443	443	443	443	443

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	329772403,618	1	329772403,618	143,318	,000[b]
	Residual	1014733816,603	441	2300983,711		
	Total	1344506220,221	442			
2	Regression	384627059,019	2	192313529,510	88,155	,000[c]
	Residual	959879161,202	440	2181543,548		
	Total	1344506220,221	442			
3	Regression	410196670,936	3	136732223,645	64,246	,000[d]
	Residual	934309549,285	439	2128267,766		
	Total	1344506220,221	442			

a. Dependent Variable: Imports
b. Predictors: (Constant), GDP
c. Predictors: (Constant), GDP, Distance
d. Predictors: (Constant), GDP, Distance, Oil_Comsumption

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	Oil_Comsumption	,142[b]	1,921	,055	,091	,312	3,206	,312
	Distance	-,219[b]	-5,014	,000	-,233	,848	1,179	,848
	EU_dummy	-,095[b]	-2,311	,021	-,109	,995	1,005	,995
	East_Asia_dummy	-,056[b]	-1,282	,201	-,061	,912	1,097	,912
	Ally_dummy	-,093[b]	-2,253	,025	-,107	,992	1,008	,992
2	Oil_Comsumption	,256[c]	3,466	,001	,163	,290	3,450	,290
	EU_dummy	-,102[c]	-2,533	,012	-,120	,994	1,006	,843
	East_Asia_dummy	,114[c]	2,169	,031	,103	,578	1,731	,538
	Ally_dummy	-,043[c]	-1,035	,301	-,049	,925	1,081	,791
3	EU_dummy	-,058[d]	-1,341	,181	-,064	,852	1,173	,249
	East_Asia_dummy	,060[d]	1,086	,278	,052	,513	1,951	,257
	Ally_dummy	,021[d]	,453	,651	,022	,761	1,313	,239

a. Dependent Variable: Imports
b. Predictors in the Model: (Constant), GDP
c. Predictors in the Model: (Constant), GDP, Distance
d. Predictors in the Model: (Constant), GDP, Distance, Oil_Comsumption

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	GDP	Distance	Oil_Comsumption
1	1	1,604	1,000	,20	,20		
	2	,396	2,014	,80	,80		
2	1	2,427	1,000	,04	,06	,04	
	2	,431	2,373	,15	,87	,04	
	3	,142	4,132	,81	,07	,93	
3	1	3,259	1,000	,02	,01	,02	,01
	2	,509	2,531	,18	,14	,07	,04
	3	,142	4,788	,79	,02	,86	,00
	4	,091	6,000	,01	,82	,05	,95

a. Dependent Variable: Imports

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-$296.7187	$6,305.6909	$1,065.3318	$963.35184	443
Residual	-$3,278.99634	$13,280.12500	-$0.00000	$1,453.89907	443
Std. Predicted Value	-1,414	5,440	,000	1,000	443
Std. Residual	-2,248	9,103	,000	,997	443

a. Dependent Variable: Imports

Appendix B

Dependent variable = exports

Model Summary[e]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,628[a]	,395	,393	$2,468.345	
2	,680[b]	,463	,460	$2,328.080	
3	,699[c]	,488	,485	$2,274.083	
4	,711[d]	,505	,501	$2,238.985	,549

a. Predictors: (Constant), GDP
b. Predictors: (Constant), GDP, East_AsiaxEmbargo
c. Predictors: (Constant), GDP, East_AsiaxEmbargo, Oil_Comsumption
d. Predictors: (Constant), GDP, East_AsiaxEmbargo, Oil_Comsumption, Distance
e. Dependent Variable: Exports

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-4,017	145,238		-,028	,978	-289,446	281,412					
	GDP	,002	,000	,628	17,125	,000	,001	,002	,628	,628	,628	1,000	1,000
2	(Constant)	44,089	137,133		,322	,748	-225,413	313,592					
	GDP	,001	,000	,557	15,517	,000	,001	,002	,628	,591	,537	,930	1,075
	East_AsiaxEmbargo	6128,803	812,795	,270	7,540	,000	4531,448	7726,157	,418	,335	,261	,930	1,075
3	(Constant)	-308,545	153,138		-2,015	,045	-609,504	-7,586					
	GDP	,001	,000	,319	5,227	,000	,001	,001	,628	,240	,177	,306	3,263
	East_AsiaxEmbargo	6161,710	793,973	,272	7,761	,000	4601,336	7722,084	,418	,344	,262	,930	1,075

	Oil_Comsumption	,577	,121	,286	4,751	,000	,338	,815	,609	,219	,161	,314	3,181
	(Constant)	215,865	202,184		1,068	,286	-181,484	613,214					
	GDP	,001	,000	,324	5,393	,000	,001	,001	,628	,247	,179	,306	3,265
4	East_AsiaxEmbargo	6371,665	783,577	,281	8,132	,000	4831,712	7911,617	,418	,359	,271	,926	1,080
	Oil_Comsumption	,699	,124	,347	5,658	,000	,456	,942	,609	,259	,188	,294	3,402
	Distance	-,186	,048	-,146	-3,893	,000	-,280	-,092	,187	-,181	-,130	,785	1,274

a. Dependent Variable: Exports

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	Oil_Comsumption	,282[b]	4,403	,000	,203	,314	3,181	,314
	Distance	-,073[b]	-1,843	,066	-,087	,843	1,186	,843
	EUxEmbargo	-,066[b]	-1,794	,074	-,084	,979	1,021	,979
	East_AsiaxEmbargo	,270[b]	7,540	,000	,335	,930	1,075	,930
2	Oil_Comsumption	,286[c]	4,751	,000	,219	,314	3,181	,306
	Distance	-,092[c]	-2,453	,015	-,115	,840	1,191	,802
	EUxEmbargo	-,049[c]	-1,414	,158	-,067	,975	1,026	,907
3	Distance	-,146[d]	-3,893	,000	-,181	,785	1,274	,294
	EUxEmbargo	-,012[d]	-,351	,726	-,017	,922	1,084	,283
4	EUxEmbargo	-,012[e]	-,353	,724	-,017	,922	1,084	,279

a. Dependent Variable: Exports
b. Predictors in the Model: (Constant), GDP
c. Predictors in the Model: (Constant), GDP, East_AsiaxEmbargo
d. Predictors in the Model: (Constant), GDP, East_AsiaxEmbargo, Oil_Comsumption
e. Predictors in the Model: (Constant), GDP, East_AsiaxEmbargo, Oil_Comsumption, Distance

Dependent variable = imports

Model Summary[e]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,495[a]	,245	,244	$1,516.89937	
2	,535[b]	,286	,283	$1,477.00492	
3	,567[c]	,321	,317	$1,441.75395	
4	,585[d]	,342	,336	$1,421.49744	,484

a. Predictors: (Constant), GDP
b. Predictors: (Constant), GDP, Distance
c. Predictors: (Constant), GDP, Distance, East_AsiaxEmbargo
d. Predictors: (Constant), GDP, Distance, East_AsiaxEmbargo, Oil_Comsumption
e. Dependent Variable: Imports

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	410,942	90,455		4,543	,000	233,166	588,718					
	GDP	,001	,000	,495	11,972	,000	,001	,001	,495	,495	,495	1,000	1,000
2	(Constant)	916,842	133,924		6,846	,000	653,631	1180,053					
	GDP	,001	,000	,581	13,277	,000	,001	,001	,495	,535	,535	,848	1,179
	Distance	-,154	,031	-,219	-5,014	,000	-,215	-,094	,007	-,233	-,202	,848	1,179
3	(Constant)	966,626	131,144		7,371	,000	708,878	1224,373					
	GDP	,001	,000	,534	12,208	,000	,001	,001	,495	,503	,480	,807	1,239
	Distance	-,164	,030	-,233	-5,438	,000	-,223	-,105	,007	-,251	-,214	,845	1,184
	East_AsiaxEmbargo	2407,559	504,439	,195	4,773	,000	1416,143	3398,975	,299	,222	,188	,926	1,079
4	(Constant)	890,005	130,960		6,796	,000	632,618	1147,392					

	GDP	,000	,000	,330	4,691	,000	,000	,001	,495	,219	,182	,304	3,288
	Distance	-,194	,031	-,276	-6,300	,000	-,255	-,134	,007	-,288	-,244	,785	1,275
	East_AsiaxEmbargo	2456,584	497,529	,199	4,938	,000	1478,743	3434,426	,299	,230	,191	,926	1,080
	Oil_Comsumption	,292	,079	,266	3,688	,000	,137	,448	,455	,174	,143	,290	3,452

a. Dependent Variable: Imports

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	Oil_Comsumption	,142[b]	1,921	,055	,091	,312	3,206	,312
	Distance	-,219[b]	-5,014	,000	-,233	,848	1,179	,848
	EUxEmbargo	,013[b]	,310	,756	,015	,980	1,021	,980
	East_AsiaxEmbargo	,180[b]	4,290	,000	,200	,930	1,075	,930
2	Oil_Comsumption	,256[c]	3,466	,001	,163	,290	3,450	,290
	EUxEmbargo	,000[c]	-,006	,995	,000	,975	1,025	,828
	East_AsiaxEmbargo	,195[c]	4,773	,000	,222	,926	1,079	,807
3	Oil_Comsumption	,266[d]	3,688	,000	,174	,290	3,452	,290
	EUxEmbargo	,011[d]	,283	,777	,014	,972	1,029	,785
4	EUxEmbargo	,046[e]	1,150	,251	,055	,922	1,084	,275

a. Dependent Variable: Imports
b. Predictors in the Model: (Constant), GDP
c. Predictors in the Model: (Constant), GDP, Distance
d. Predictors in the Model: (Constant), GDP, Distance, East_AsiaxEmbargo
e. Predictors in the Model: (Constant), GDP, Distance, East_AsiaxEmbargo, Oil_Comsumption