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## Economic Policy Papers

### Peace Creation and Peace Diversion updated

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**No. 02-21**

**July 2021**

**Publication Editor: Vasiliki Bozani**

**ERC Sponsors (in alphabetical order)**

Central Bank of Cyprus

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# Αναθεώρηση της Δημιουργίας Ειρήνης και της Εκτροπής Ειρήνης

Κώστας Χατζηγιάννης και Ηρακλής Πάπας

## ΠΕΡΙΛΗΨΗ

Το άρθρο αυτό επανεξετάζει την επίδραση των συμφωνιών ελεύθερου εμπορίου (FTAs) και των συμφωνιών τελωνειακής ένωσης (CUs) στην πιθανότητα συγκρούσεων μεταξύ δύο χωρών όπως αυτή παρουσιάστηκε στο Hadjiyiannis et al. (2016). Επεκτείνουμε την ανάλυση με δύο τρόπους. Πρώτα, χρησιμοποιούμε τα νέα δεδομένα από το Correlates of War Project που δημοσιεύτηκαν μετά την δημοσίευση του πιο πάνω άρθρου επεκτείνοντας την περίοδο της ανάλυσης κατά 10 χρόνια (2000-2010) αυξάνοντας σημαντικά το δείγμα. Ακολουθώντας την ίδια εμπειρική μεθοδολογία εξετάζουμε τις επιδράσεις της Δημιουργίας Ειρήνης και της Εκτροπής Ειρήνης που παρουσιάστηκαν στο Hadjiyiannis et al. (2016) και επιβεβαιώνουμε τα δικά τους αποτελέσματα με την διευρυμένη βάση δεδομένων. Δημιουργία Ειρήνης είναι η μείωση στην πιθανότητα σύγκρουσης μεταξύ δύο χωρών που προκύπτει όταν είναι μέλη της ίδιας συμφωνίας εμπορίου και Εκτροπή Εμπορίου είναι η αύξηση της πιθανότητας σύγκρουσης μεταξύ μελών και μη-μελών της συμφωνίας.

Επιπρόσθετα, εκτιμούμε την επίδραση στην πιθανότητα πολέμου των βασικών συμμετεχόντων στα ακόλουθα υποθετικά σενάρια:

- 1) Διακοπή της τελωνειακής ένωσης μεταξύ της Τουρκίας και της Ε.Ε.
- 2) Έξοδος του Ηνωμένου Βασιλείου από την Ε.Ε. χωρίς καμία εμπορική συμφωνία
- 3) Τελωνειακή ένωση μεταξύ Ε.Ε. και Ουκρανίας
- 4) Συμφωνία ελεύθερου εμπορίου μεταξύ ΗΠΑ και Κίνας

Θεωρούμε ότι όλα τα προαναφερθέντα υποθετικά σενάρια έλαβαν χώρα το έτος 2000 και χρησιμοποιούμε τα δεδομένα από το 2000 έως το 2009 για να ελέγξουμε πώς αλλάζει η πιθανότητα πολέμου σε κάθε ένα από τα υποθετικά σενάρια. Κάθε σενάριο προσομοιώνεται ξεχωριστά και ανεξάρτητα από τα υπόλοιπα. Στη συνέχεια υπολογίζουμε τη διαφορά μεταξύ της προβλεπόμενης πιθανότητας κάθε σεναρίου από την εκτιμώμενη πιθανότητα του πραγματικού status quo.

Στο πρώτο σενάριο βρίσκουμε ότι η διακοπή της τελωνειακής ένωσης μεταξύ Ε.Ε. και Τουρκίας αυξάνει την πιθανότητα πολέμου μεταξύ Κύπρου και Τουρκίας κατά 31% αρχικά, με το ποσοστό αυτό να φτάνει το 188%, κατά το έτος 2009. Κάτω από το ίδιο σενάριο η ποσοστιαία μεταβολή της πιθανότητας πολέμου για το ζεύγος Ελλάδα και Τουρκία είναι, επίσης, 19,67% κατά μέσο όρο για όλη την εξεταζόμενη περίοδο. Το “σκληρό“ Brexit οδηγεί

σε αύξηση της πιθανότητας σύγκρουσης των ζευγών Η.Β.-Γαλλία και Η.Β.-Γερμανία και ταυτόχρονα μειώνει την αντίστοιχη πιθανότητα για έναν πόλεμο μεταξύ Γαλλίας και Γερμανίας. Η υπογραφή τελωνειακής ένωσης μεταξύ Ουκρανίας και Ευρωπαϊκής Ένωσης αυξάνει κατά μέσο όρο 39,19% την πιθανότητα σύγκρουσης μεταξύ Ουκρανίας και Ρωσίας. Τέλος, μια υποθετική συμφωνία ελεύθερου εμπορίου μεταξύ ΗΠΑ και Κίνας αυξάνει αρχικά την πιθανότητα διένεξης μεταξύ τους, εντούτοις μετά το έτος 2004 η ποσοστιαία μεταβολή παίρνει αρνητικό πρόσημο όπως είναι αναμενόμενο με βάση το θεωρητικό υπόβαθρο της έρευνας. Παρόμοια αποτελέσματα ισχύουν και για τα ζευγάρια Κίνα-Νότια Κορέα και Κίνα-Ιαπωνία.

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# Peace Creation and Peace Diversion updated

Costas Hadjiyiannis\* and Iraklis Pattas

## **Abstract**

This paper revisits the investigation of the impact of Free Trade Agreements (FTAs) and Custom Unions (CUs) on bilateral Military Interstate Disputes presented in Hadjiyiannis et al. (2016). We extend the analysis in two ways. First, we incorporate new data from the Correlates of War Project released after the publication of that paper extending the time period under investigation by 10 years (2000-2010) which increases the sample significantly. We follow the same methodology, as Hadjiyiannis et al. (2016), to investigate the Peace Creation and Peace Diversion effects identified in the paper and confirm their results with the expanded dataset. Peace Creation is the decrease in the probability of conflict between two countries if they are part of the same Preferential Trade Agreement and Peace Diversion is the increase in the probability of conflict between members and non-members.

Moreover, we evaluate the impact on the probability of conflict between key players in the following hypothetical scenarios:

- 1) Interruption of the CU between Turkey and EU.
- 2) "Hard" Brexit
- 3) CU between EU and Ukraine
- 4) FTA between U.S.A and China

We assume that all the aforementioned hypothetical scenarios took place in the year 2000 and we use the actual data from 2000 to 2009 to check how the likelihood of MID changes under the hypothetical scenarios. Each scenario is estimated independently of the other ones. We then calculate the difference between the predicted probability under each hypothetical scenario and the estimated probability under the actual status quo.

In the first scenario, we find that the interruption of the CU between EU and Turkey increases the probability of war between Cyprus and Turkey by 31% initially and this increases to 188% in 2009. For the same scenario, the increase of the likelihood of conflict between Greece and Turkey is 19,67% on average for the whole period (2000-2009). Hard Brexit leads to an increase of the probability of dispute for the country-pairs U.K.-France and U.K.- Germany and

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at the same time decreases the probability of conflict between France and Germany. The signing of a CU between Ukraine and European Union increases the probability of conflict between Ukraine and Russia by 39,19% on average. Finally, a Free Trade Agreement between the US and China increases the probability of conflict between them initially but decreases the likelihood of conflict after 2004 as expected. Similar results apply for the couples China-South Korea and China-Japan.

**Keywords:** Preferential trade agreements, Regionalism, Military conflict, War

## **1. Introduction**

The importance of economics in wars was known for thousands of years. For example, Plato (427-347 B.C.), in one of his best-known dialogues *Phaedo*, analyzed among others the phenomenon of war by saying that “All wars are undertaken for the acquisition of wealth”. The quote is well accepted by historians and other social scientists and backed up by archeological and other historical evidence.

Fearon (1995) argues that war is devastating for all parties involved including the “winners”. For example, the two World Wars were disastrous for all the countries involved. Especially in Europe, where most of the destruction took place, the consequences were devastating with millions of people dead and injured and leaving the European economies in chaos. Economic Integration between European economies and especially Germany and France was an attempt to avoid another war in Europe. The first step for European economic integration was the Organisation for European Economic Cooperation – OEEC in 1948 through the Marshall Plan and in 1951 the European Coal and Steel Community (ECSC), the predecessor of the European Union (EU), was established. From 1951 till nowadays, the EU is the biggest Preferential Trade Agreement (PTA) in the world, and it succeeded in maintain peace for 70 years. The same can be argued for many other multinational and bilateral PTAs.

In this paper we investigate the relationship between conflict and economic integration by extending Hadjiyiannis et al (2016) in two ways. First, we extend the period under investigation up to 2010 using the updated version of the datasets. Second, we estimate the impact on the probability of key participants in conflict in the following four scenarios: Interruption of the Custom Union between Turkey and E.U., “Hard” Brexit, Custom Union between E.U. and Ukraine and a Free Trade Agreement between U.S.A and China. We investigate each of the hypothetical scenarios independently of the others assuming that each scenario took place in 2000. We use the regressions for the period up to 2010 to estimate probabilities for 2000 to 2009 based on the actual values of the explanatory variables in this period.

The results of our bivariate probit model (Table 2) provide support for both the peace creation and the peace diversion effects introduced by Hadjiyiannis et al. (2016). Finally, the difference in likelihood of conflict in the majority of country pairs examined under the hypothetical scenarios in Section 5 of this paper is in accordance with the peace creation and peace diversion effects.

## **2. Literature Review**

The closest paper to our paper is Hadjiyiannis et al. (2016), which considers the peace-creation and peace-diversion effects of PTAs. They develop a two-stage dynamic game with 3 countries as players. Two of them are enemies. The authors derive the solution of the game



in 5 different scenarios (a benchmark scenario with no regionalism and four involving different combinations of FTAs and CUs). They find that a PTA between the two enemies decreases their probability to engage in conflict (peace creation), while trade agreements of anyone of the enemies with a third country increases the probability of a war between the two enemies (peace diversion). They then empirically test for the existence of peace creation and peace diversion using data for the years 1958-2000. The empirical investigation confirms the predictions of their theoretical model.

Hadjiyiannis et al. (2016) relies on Martin et al. (2008) which is the first paper that examines in depth the effects of bilateral and multilateral trade openness on the probability of warfare between two countries. They find that multilateral trade openness increases the likelihood of a conflict for each country-pair, while bilateral trade openness promotes peace. Furthermore, Martin et al. (2012) analyze both theoretically and empirically reverse causality, namely the impact of a former strife between two nations on the probability to sign a trade agreement. Their results indicate that the pairs with recent conflicts (1 to 20 years before  $t$ ) are less likely to sign a Regional Trade Agreement (RTA), compared to the countries which have clashed in earlier times (over 20 years from date  $t$ ). The period that it is examined both by Martin et al. (2008) and Martin et al. (2012) is 1950 to 2000.

Mansfield et al. (1999), finds that free trade promotes peace between states that have trade agreements. More specifically, they examine the effect of PTAs on MIDs using similar methodology to Oneal and Russett (1997). Their sample contains 19772 country pairs for the period 1950-1985 and they find that trade agreements deter interstate conflicts, among their members.

### **3. *Data and main variables***

The main source of the data we use is the Correlates of War project, which makes available a wide range of data sets related to armed conflicts and international relations of all the United Nations members for the last two centuries. Nevertheless, we only use the data for the period 1958–2010 because of unavailability of other crucial explanatory variables.

Our dependent variable, Military Interstate Disputes (MIDijt), is the occurrence of a conflict between two countries of the world. According to the definition of the Correlates of War Project “Militarized interstate disputes are united historical cases of conflict in which the threat, display or use of military force short of war by one-member state is explicitly directed towards the government, official representatives, official forces, property, or territory of another state. Disputes are composed of incidents that range in intensity from threats to use force to actual combat short of war”. Following, the methodology of Oneal and Russett (1997), Martin et al. (2008) and Hadjiyiannis et al. (2016), MIDijt in this paper is defined to be equal to 1 between

the pair of nations  $i$  and  $j$  if the hostility level is 3 or 4 or 5 as defined in the Correlates of War coding system. Level 3 represents the display of force while level 4 is the use of force between the countries- pair. Finally, hostility is at its maximum level 5 when the two countries are in a full-blown war. Otherwise, when hostility level is 1 or 2, MID takes the value of 0. Level 1 holds is no military action between countries  $i$  and  $j$  and level 2 is defined as the threat of using force.

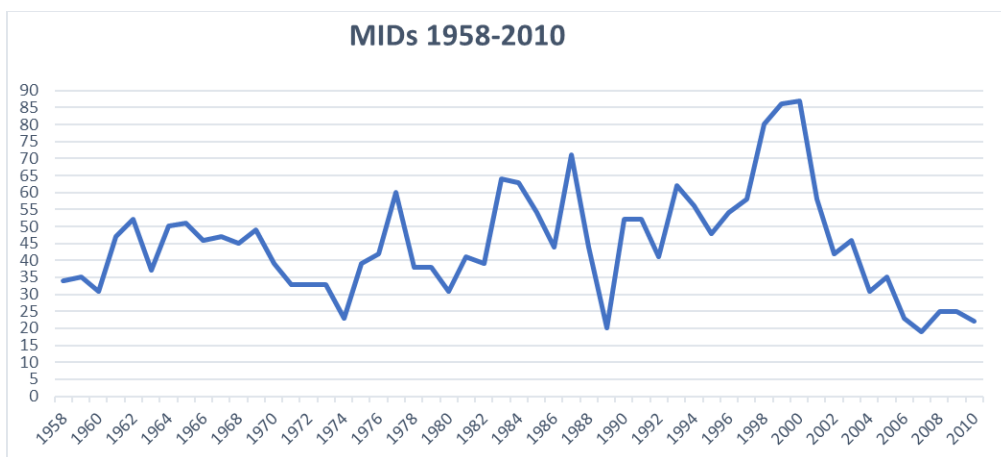
The two main types of Preferential Trade Agreements (PTAs) that we examine are Free Trade Agreements (FTAs) and Custom Unions (CUs). A free trade agreement involves the removal of all barriers between the members of the agreement. A Custom Union involves the removal of tariff barriers between members and common external trade policy with non-members. Thus, for the investigation of the peace creation effect of PTAs, in the empirical part of this paper, we use two independent dummy variables one for FTA and one for CU in each country pair, which are created de Sousa (2012) ,based on information from the World Trade Organization database and used by Hadjiyiannis et al.(2016).

Furthermore, Hadjiyiannis et al. (2016) based on the data set of COW for bilateral trade, created two other variables in relation to Preferential Trade Agreements (PTFTA $_{ijt}$  and PTCU $_{ijt}$ ), in order to investigate the effect of FTAs and CUs on the likelihood of a dispute between member and non-member countries of the trade agreements. PTFTA $_{ijt}$  and PTCU $_{ijt}$  represent the percentage of trade for a single year of the pair of countries ( $i, j$ ) with the rest of the world that is covered by Free Trade Agreements and Custom Unions respectively and thus capture peace diversion. As mentioned in their paper, the countries which have simultaneously Free Trade Agreements with both countries of the pair at date  $t$  are excluded from the rest of world. The same logic was applied in the case of states in a Custom Union with both countries of the pair at  $t$ . These two explanatory variables are included in the empirical part of this paper as well and we expect that the coefficients of PTFTA and PTCU to be greater than zero.

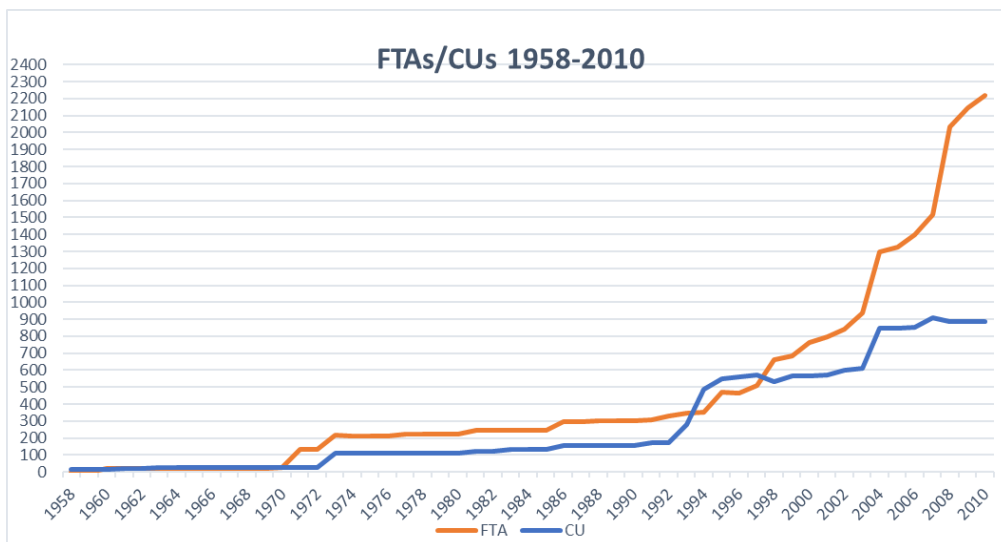
In addition, other geopolitical, economic, military and cultural variables could affect the probability of a bilateral conflict. We include all other covariates used by Martin et al. (2008) and Hadjiyiannis et al (2016). Specifically, we include dummies regarding to any potential colonial links, the existence of a common official language and/or if countries  $i$  and  $j$  have common borders (contiguity). Furthermore, dummies controlling for the participation of both countries in the World Trade Organization and/or if they have a military alliance (e.g. NATO) at date  $t$ . The number of peaceful years between the two nations, the number of other wars in year  $t$ , a democracy index and the bilateral weighted distance of the pair are also included. Finally, a variable for the area of the two states are considered as well.

The sample of this paper contains 238,209 annual observations for 52 years. Figure 1 shows the MIDs in each year of the sample. The highest number of bilateral conflicts (87) in a single year, took place at beginning of 21<sup>st</sup> century, in 2000. In addition, for the examined period (1958-2010), FTA's and CU's have an increasing trend. More specifically, in 1958 only 15 PTAs existed and were all CU's. After 52 years, in 2010, FTAs and CUs were 2217 and 889 respectively. Figure 2 summarize the evolution of trade agreements year by year.

**FIGURE 1**  
**MILITARY INTESTATE DISPUTES 1958-2010**



**FIGURE 2**  
**PREFERENTIAL TRADE AGREEMENTS 1958-2010**



#### **4. Results**

We first present the results for the pooled probit estimations (Table 1) as a benchmark. In both regressions, we include the number of peaceful years from the last conflict of the two nations, controlling for temporal dependence of the observations. In addition, following Hadjiyiannis et al. (2016), we control for autocorrelation by including 10 lags of MID.

Regression 1 uses the full sample of country pairs, and we find evidence of peace diversion only, as indicated by the positive sign of the coefficient on PTFTA, which is statistically significant at the 1% level. Contrary to this paper, Hadjiyiannis et al. (2016) (Table 4) finds statistically significant evidence for both peace creation and peace diversion effects. There are also some other minor differences in the results. Two statistically significant variables in their paper, U.N vote correlation and common official language are not significant based on the results of our paper, while on the other hand, number of WTO member in dyad and In distance to nearest war in  $t$  become significant at 10% and 1% respectively in this updated version. Finally, the coefficient of the independent variable, number of other wars in  $t$ , is the opposite in our paper (negative) compared to the original one (positive) with its significance level at 1% in both cases.

The only difference between Regression 2 and Regression 1 only is that in the former we combine FTA and CU dummies in a single dummy variable (PTA) checking for the existence of any bilateral Preferential Trade Agreement. The negative sign of the coefficient on PTA is the expected one. However, is still not statistically significant. The sign of the coefficients of the rest variables remains the same as in our preferred probit estimation. Although, the level of significance of PTFTA in this case is at 5%.

**TABLE 1**  
**PROBIT RESULTS**

VARIABLES	(1) MID	(2) MID
FTA	0.1323 (0.1074)	
CU	0.0779 (0.0886)	
PTFTA	0.5276*** (0.1853)	0.4611** (0.1817)
PTCU	-0.2063 (0.1839)	-0.2601 (0.1792)
# peaceful years	-0.0026*** (0.0005)	-0.0027*** (0.0005)
# other wars in t	-0.2999*** (0.0133)	-0.2997*** (0.0132)
UN vote correlation (t - 4)	-0.0474 (0.0865)	-0.0253 (0.0876)
Zero trade (t - 4)	-0.3743*** (0.1002)	-0.3731*** (0.0999)
# GATT/WTO members in dyad	0.0868* (0.0454)	0.0914** (0.0454)
Sum of democracy indexes	-0.0038 (0.0026)	-0.0031 (0.0026)
Alliance active in t	-0.2060 (0.2407)	-0.2393 (0.2397)
Sum ln areas	0.0259** (0.0107)	0.0229** (0.0105)
ln distance	-0.1206*** (0.0410)	-0.1235*** (0.0407)
Contiguity	0.7905*** (0.0783)	0.8004*** (0.0788)
Common language	0.0839 (0.0570)	0.0922 (0.0569)
Colonial relationship	0.0715 (0.0934)	0.0606 (0.0935)
Common colonizer	0.0113 (0.0744)	0.0058 (0.0736)
ln distance to nearest war in t	-0.0001*** (0.0000)	-0.0001*** (0.0000)
PTA		-0.0504 (0.0764)
Constant	26.5166*** (1.3456)	26.6100*** (1.3412)
Observations	238,209	238,209

*Note:* Robust standard errors in parentheses: \*\*\* p<0.01, \*\* p<0.05 and \* p<0.1

As Hadjiyiannis et al (2016) argues the pooled probit methodology is flawed and the preferred methodology addressing endogeneity issues is a bivariate probit model. This is the standard approach in the literature to estimating non-linear models with discrete endogenous explanatory variables and it is the most appropriate methodology because it enables the

control of common variables of disputes and trade agreements, which are unobserved, but time varying. The first equation of our bivariate probit model describes the occurrence of a military dispute between two countries while the second one, the existence of a PTA in the pair. Although the non-linearity of the two equations is sufficient for identification of parameters having a variable that is included in the PTA equation but not included in the MID equation improves identification of the model.

In Table 2 the results of recursive bivariate probit models are presented. Columns 1 and 2 represent the results of our preferred bivariate probit. The sample is the same as in the case of the probit models of Table 1. Estimations show that peace creation is confirmed as the negative sign of variable PTA is significant at 10%. Peace diversion is also confirmed, from the positive sign of PTFTA at the 1% significance level. In addition, coefficients of the the total number of FTA and the number of CU agreements at date  $t-5$  between countries  $i$  and  $j$  with third countries, indicate evidence at 1% level that the more is the number of PTAs with other countries in  $t-5$ , the higher is the probability of signing of a PTA between  $i$  and  $j$  at time  $t$ . These estimations are compatible with the results of Hadjiyiannis et al. (2016). In their paper peace creation is statistically significant at the 10% significance level and the coefficient in their paper is -0.3374 which is very close to our coefficient which is -0.3004.

Columns 3 and 4 of Table 2, contain the estimated results from an alternative bivariate model with PTFTA and PTCU lagged by 5 years. This method acts as a robustness check. It is used by Hadjiyiannis et al. (2016) even though as they argue it is unlikely that endogeneity is a problem for these variables<sup>1</sup>. The sample in this case increases to 244758 observations. The qualitative results are robust but the significance of PTA increases to 5% and the coefficient in changes to -0.3883 compared to -0.3476 in Hadjiyiannis et al. (2016).

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<sup>1</sup> For more information on the endogeneity problem and why it is unlike to be a problem see Hadjiyiannis et al. (2016).

**TABLE 2**  
**BIVARIATE PROBIT RESULTS**

VARIABLES	(1) MID	(2) PTA	(3) MID	(4) PTA
PTA	-0.3004* (0.1552)		-0.3883** (0.1602)	
PTFTA	0.5371*** (0.1812)			
PTCU	-0.1459 (0.1801)			
# peaceful years	-0.0026*** (0.0005)		-0.0026*** (0.0005)	
# other wars in t	-0.2995*** (0.0131)		-0.3018*** (0.0132)	
UN vote correlation (t-4)	-0.0456 (0.0856)		-0.0468 (0.0840)	
Zero trade (t-4)	-0.3795*** (0.1000)	-0.2089*** (0.0203)	-0.3724*** (0.1001)	-0.2336*** (0.0196)
# GATT/WTO members in dyad	0.1072** (0.0451)	0.3227*** (0.0175)	0.1171*** (0.0454)	0.3262*** (0.0172)
Sum of democracy indexes	-0.0043 (0.0026)		-0.0047* (0.0026)	
Alliance active in t	-0.1737 (0.2388)		-0.1688 (0.2370)	
Sum In area	0.0261** (0.0106)		0.0278*** (0.0105)	
In distance	-0.2675*** (0.0679)	-1.0130*** (0.0104)	-0.3025*** (0.0687)	-0.9974*** (0.0098)
Contiguity	0.7395*** (0.0812)	-0.1714*** (0.0270)	0.7233*** (0.0803)	-0.1334*** (0.0262)
Common language	0.1004* (0.0568)	0.3840*** (0.0171)	0.1122** (0.0562)	0.3631*** (0.0162)
Colonial relationship	0.0459 (0.0924)	-0.1675*** (0.0416)	0.0359 (0.0898)	-0.1485*** (0.0394)
Common Colonizer	-0.0014 (0.0735)	-0.1128*** (0.0210)	0.0081 (0.0723)	-0.1235*** (0.0201)
In distance to nearest war in t	-0.0000** (0.0000)		-0.0000* (0.0000)	
Sum of FTAs with third countries (t – 5)		0.0362*** (0.0008)		0.0340*** (0.0007)
Sum of CUs with third countries (t – 5)		0.0240*** (0.0006)		0.0229*** (0.0006)
PTFTA (t-5)			0.6952*** (0.1866)	
PTCU (t-5)			-0.0937 (0.1898)	
Constant	27.5374*** (1.3581)	4.7051*** (0.1319)	27.9593*** (1.3496)	4.6180*** (0.1295)
Observations	238,209	238,209	244,758	244,758

Note: Robust standard errors in parentheses: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## 5. Scenarios

We use the results of the bivariate model (Table 2 Columns (1)-(2)) to estimate predicted probabilities of conflict between key participants from 2000-2009 using the actual values of covariates changing the values of PTA, PTFTA and PTCU to reflect four hypothetical scenarios. These are:

- 1) Interruption of the CU between Turkey and EU.
- 2) "Hard" Brexit
- 3) CU between EU and Ukraine
- 4) FTA between U.S.A and China.

The data used to estimate the likelihoods for the scenarios for the period 2000-2009 are identical to those used for the regressions as well.

Figures 3.1-6.4 present the percentage change of the probability of war between the predicted probability of conflict between the two nations based on the scenario and the real probability, calculated according to the countries' actual trade relationship for each specific case.

$$\Delta\% \text{ Probability of MID} = \frac{\text{Simulated probability of MID} - \text{Real Probability of MID}}{\text{Real Probability of MID}} * 100$$

### A. Scenario 1

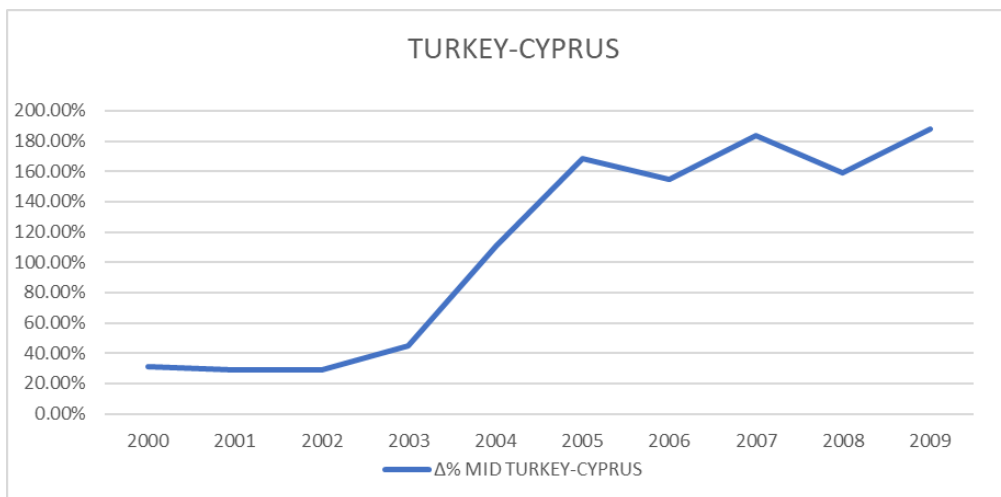
The first case that we examined is the hypothetical scenario where Turkey and the European Union interrupt their customs union trade agreement in year 2000, which means not only the imposition of tariffs between Turkey and the member states but also the cessation of free trade between Turkey and third countries that have a trade agreement with E.U. during the period 2000-2009. The following graphs 3.1-3.4 present our predictions for four different country-pairs based on long standing tensions in the area.

Figure 3.1 shows that the probability of conflict between Turkey and Cyprus increases after the interruption of the trade agreement. This confirms peace creation. Turkey and Cyprus (as a member of E.U.) no longer have a trade agreement, so peace creation ceases to hold, increasing the probability of conflict by around 31% at the beginning, which over time reached 188% in 2009. Similarly, in Figure 3.2 the interruption of the CU raises the likelihood of war between Turkey and Greece by over 20% in the first few years. In this case the percentage change has a decreasing trend from 2003 up to 2008, while for the year 2009 the corresponding percentage change of the probability of MID increased to 40%. Furthermore, as it is shown in Figure 3.3 this scenario increases the likelihood of a war between Turkey and



the Russian Federation from 2000-2003 but afterwards there is a decreasing trend, which eventually leads to the expected result of a reduced probability of war between the two countries in accordance with the peace diversion effect. Finally, a potential war between Turkey and Armenia is 57% more likely on average for the period 2000-2009 (see. Figure 3.4).

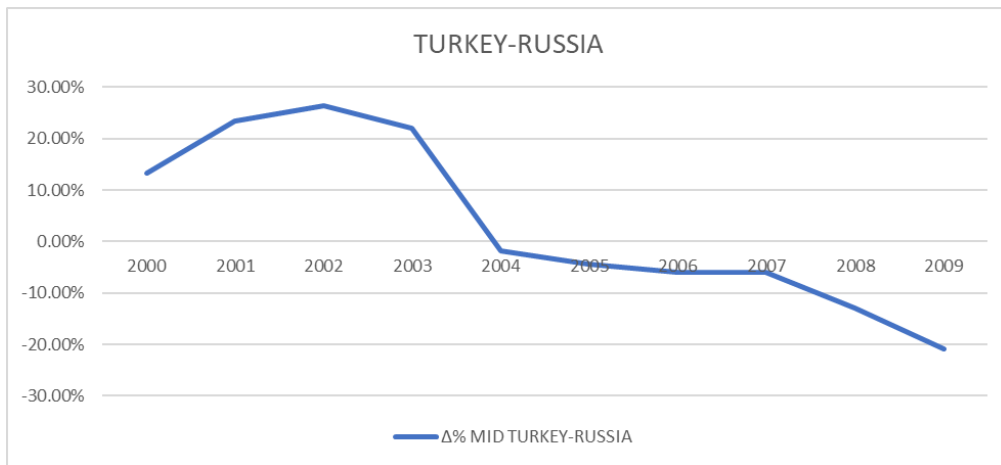
**FIGURE 3.1**  
**MID PERCENTAGE CHANGE TURKEY-CYPRUS**



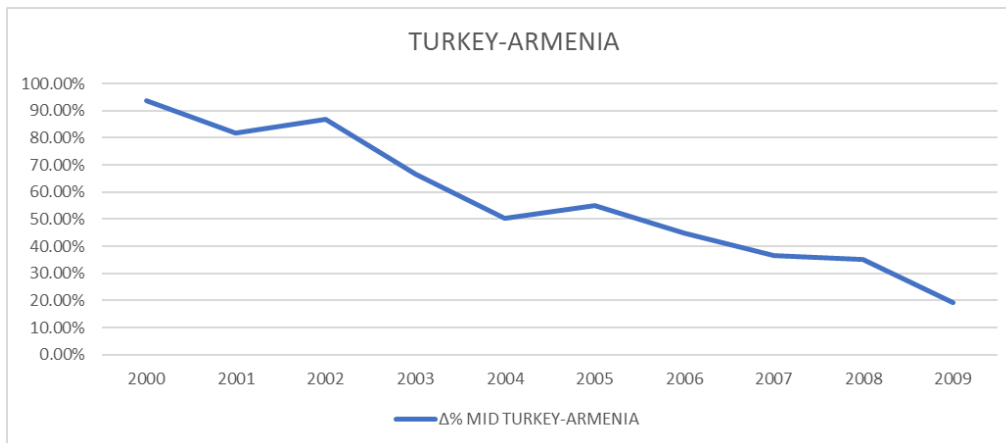
**FIGURE 3.2**  
**MID PERCENTAGE CHANGE TURKEY-GREECE**



**FIGURE 3.3**  
**MID PERCENTAGE CHANGE TURKEY-RUSSIA**



**FIGURE 3.4**  
**MID PERCENTAGE CHANGE TURKEY ARMENIA**

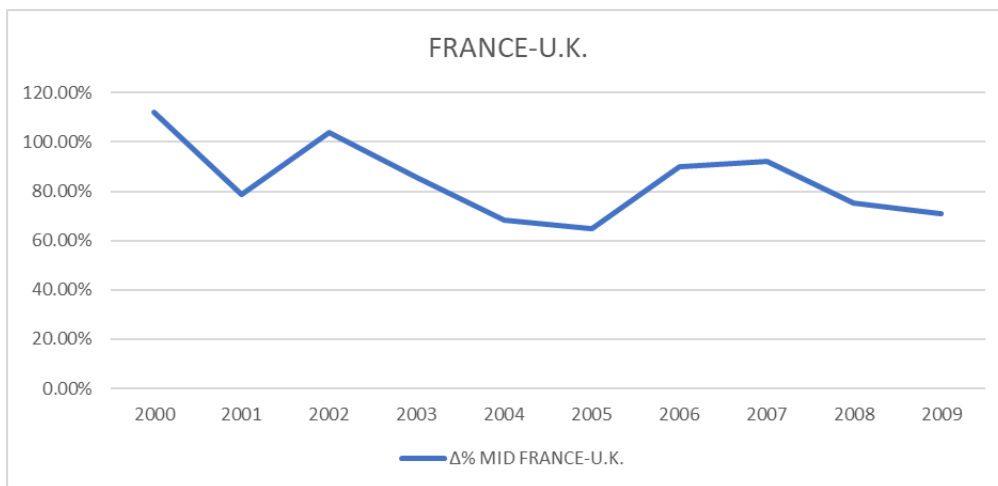


**B. Scenario 2**

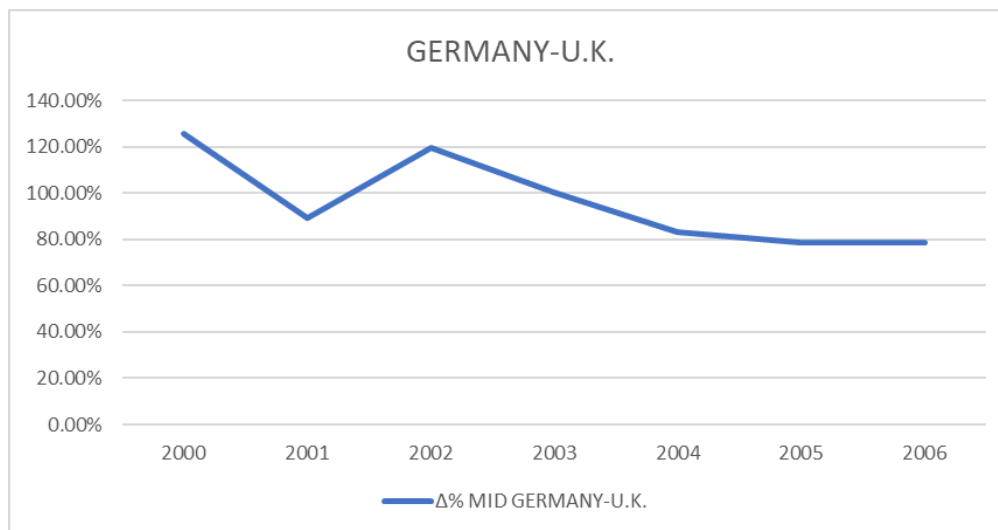
The second scenario presented by this paper is the case of a “Hard” Brexit which means no CU and/or FTA between United Kingdom and European Union. Note that the estimated results concern the period 2000-2009 and not the actual time of Brexit. Figures 4.1, 4.2 and 4.3 verify again the peace creation effect of Preferential Trade Agreements. Figures 4.1 and Figures 4.2 demonstrate an increase in the probability of conflict between U.K-France and U.K-Germany if the Brexit had taken place in 2000, while at the same time decreasing the probability of conflict between France-Germany (Figure 4.3). It is important to note that for these country pairs the real probabilities of disputes as well as the hypothetical ones are close to zero, since even with the interruption of the C.U many other peace promoting factors exist between the pairs (e.g., France, Germany and United Kingdom are still members of the same military alliance, NATO).

In addition, we investigate how this hypothetical scenario affects the pairs Cyprus-Turkey and Greece-Turkey as well. As it is shown in Figures 4.4 and 4.5 “Hard” Brexit has a sizeable impact on the probability of conflict in these two country-pairs with an increase of 30,84% and 12,69% on average, respectively.

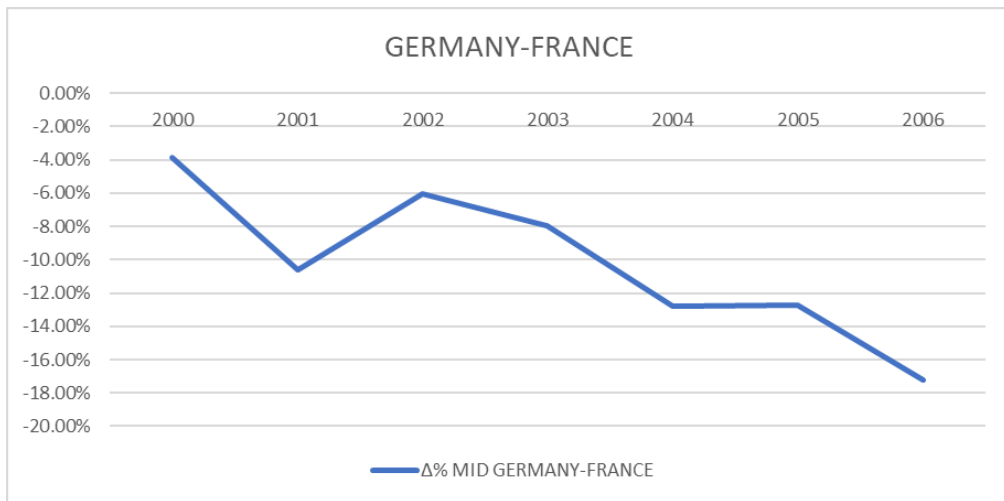
**FIGURE 4.1**  
**MID PERCENTAGE CHANGE FRANCE-U.K.**



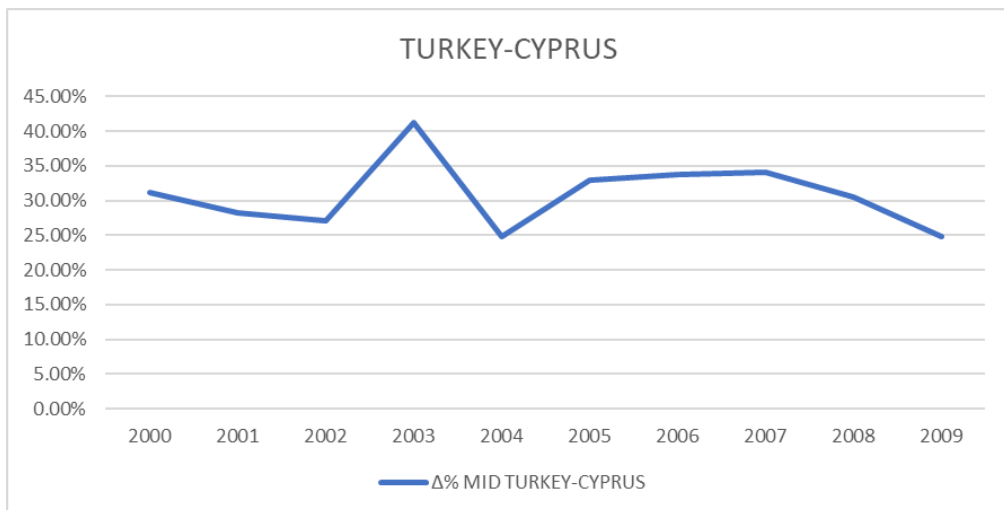
**FIGURE 4.2**  
**MID PERCENTAGE CHANGE GERMANY-U.K.**



**FIGURE 4.3<sup>2</sup>**  
**MID PERCENTAGE CHANGE GERMANY-FRANCE**

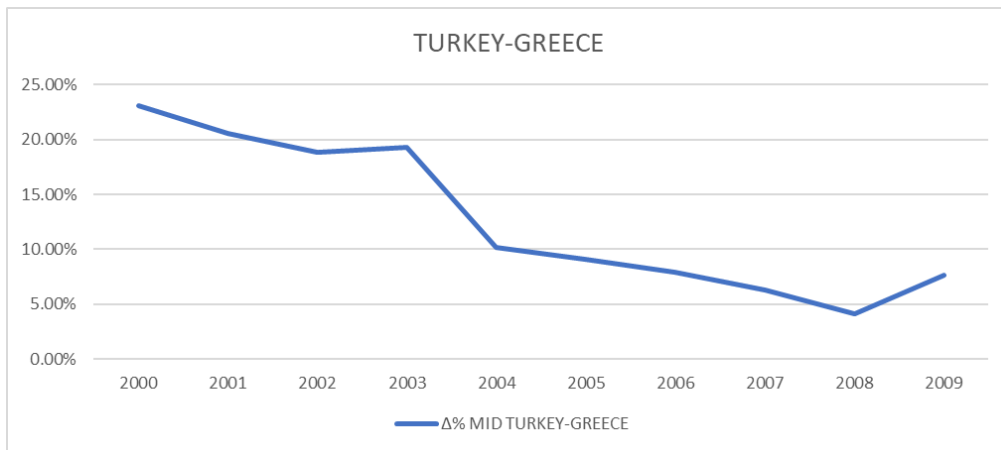


**FIGURE 4.4**  
**MID PERCENTAGE CHANGE TURKEY-CYPRUS (BREXIT)**



<sup>2</sup> Figures 4.2- 4.3 present data for the years 2000-2006 due to lack of data.

**FIGURE 4.5**  
**MID PERCENTAGE CHANGE TURKEY-GREECE (BREXIT)**



**C. Scenario 3**

In this scenario we examine a Customs Union trade agreement between European Union and Ukraine in 2000. This is interesting in light of the ongoing tension between Ukraine and Russia since 2014, when Ukrainian citizens of Russian descent in South-East Ukraine collided with the interim government after the Ukrainian revolution and the fall of Yanukovich government. As a result, with the involvement of the Russian army and after a referendum the Crimean Peninsula was annexed by the Russian Federation.

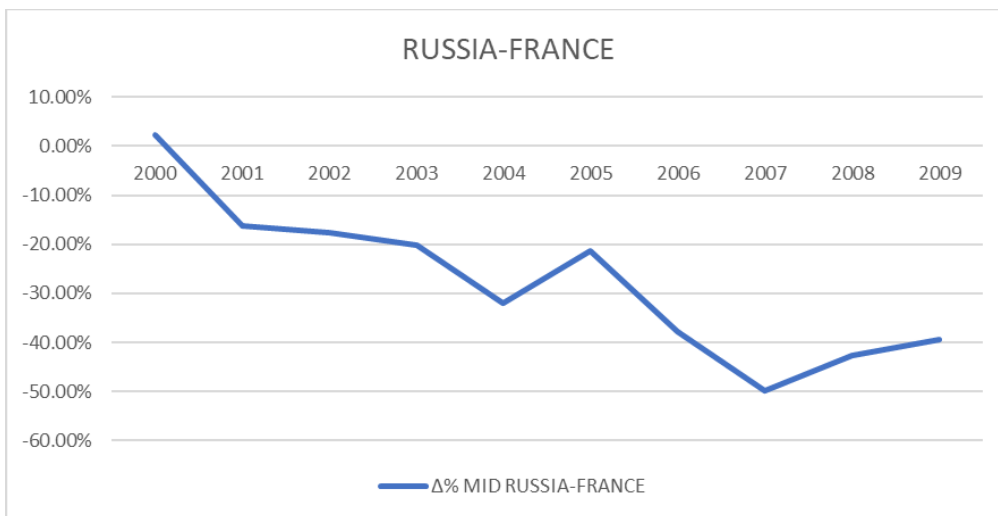
A CU between EU and Ukraine means that Ukraine has PTAs with the countries that the EU has trade agreement as well. In addition, we need to clarify that for all the countries that became EU members after 2000, we adjust the scenario based on the year they joined the Union.

The probability of a bilateral MID for the pair Ukraine- Russia increases by 70% immediately after the implementation of the Customs Union and by 39,19% on average for the whole period 2000-2009. This estimation is in accordance with peace diversion effect of PTA's. In contrast, the corresponding probability of Russia's war with two Member States from the other party of CU, France and Germany, lessens as shown in Figures 5.2 and 5.3. Figure 5.4 shows that a war between Russia and Turkey is on average 1,17% less likely. Finally, the hypothetical trade agreement of European Union and Ukraine increases the probability of a dispute between the Russian Federation and the United States of America by 32,54% (see Figure 5.5). However, it is worth mentioning that for the period 2006-2009 the percentage change for the country pair is negative.

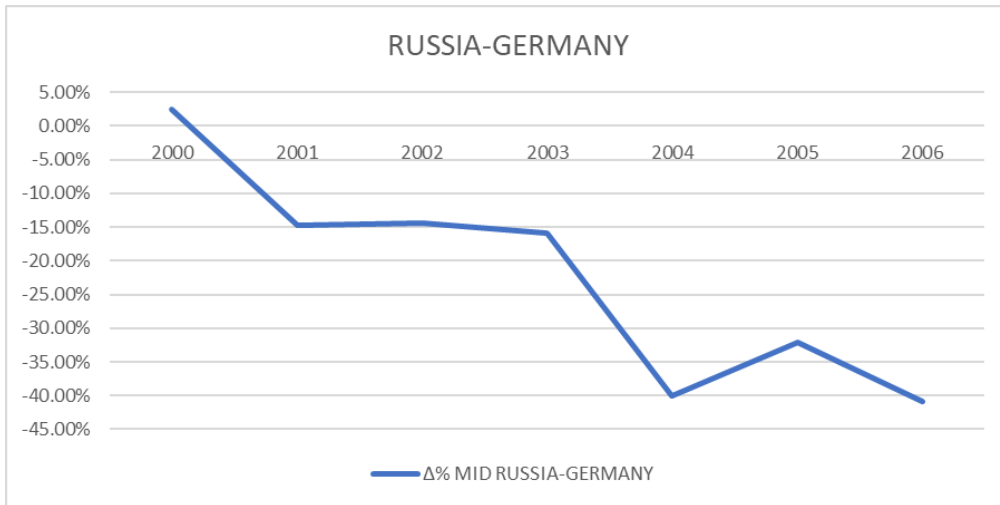
**FIGURE 5.1**  
**MID PERCENTAGE CHANGE RUSSIA-UKRAINE**



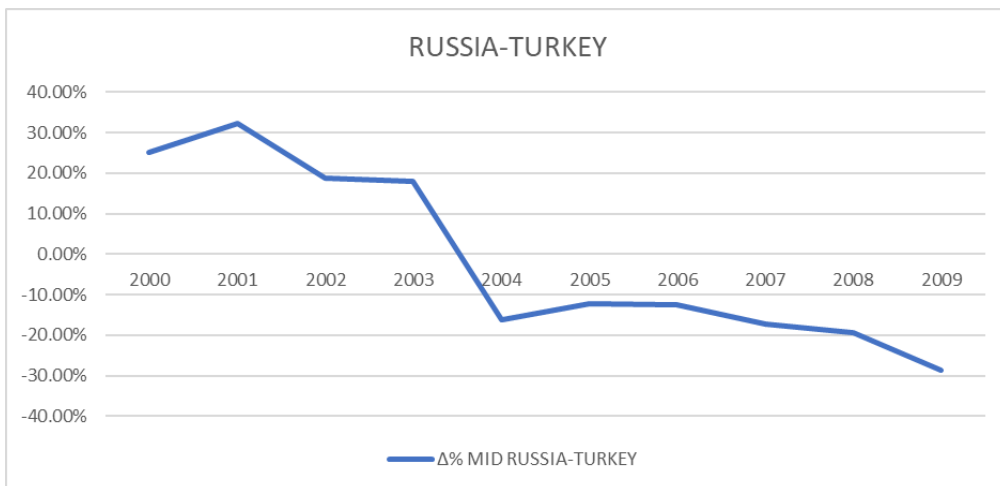
**FIGURE 5.2**  
**MID PERCENTAGE CHANGE RUSSIA-FRANCE**



**FIGURE 5.3<sup>3</sup>**  
**MID PERCENTAGE CHANGE RUSSIA-GERMANY**



**FIGURE 5.4**  
**MID PERCENTAGE CHANGE RUSSIA-TURKEY (C.U. UKRAINE-E.U.)**



<sup>3</sup> Figure 5.3 presents data for the years 2000-2006 due to lack of data.

**FIGURE 5.5**  
**MID PERCENTAGE CHANGE RUSSIA-U.S.A**

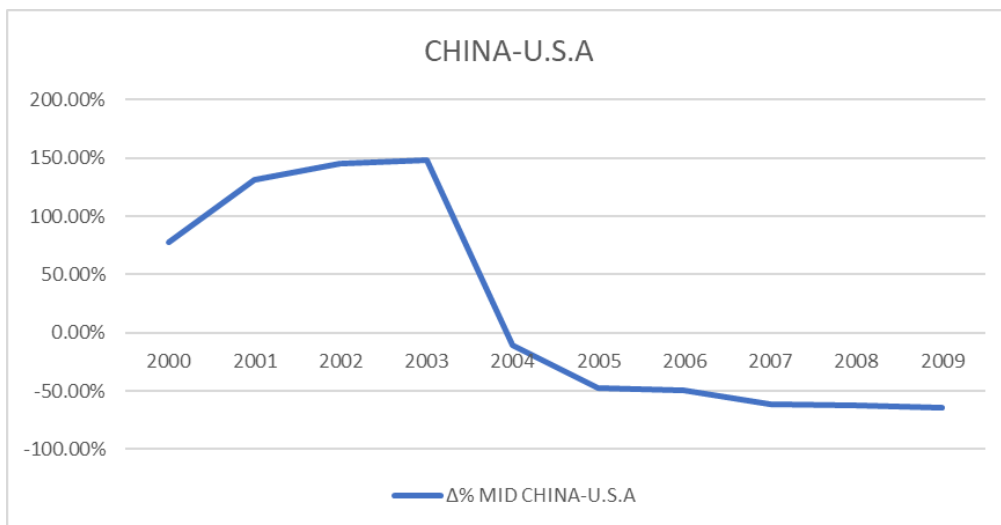


**D. Scenario 4**

Finally, we develop predictions for the period 2000-2009 based on the hypothesis that a Free Trade Agreement between the United States of America and the People's Republic of China takes place in 2000.

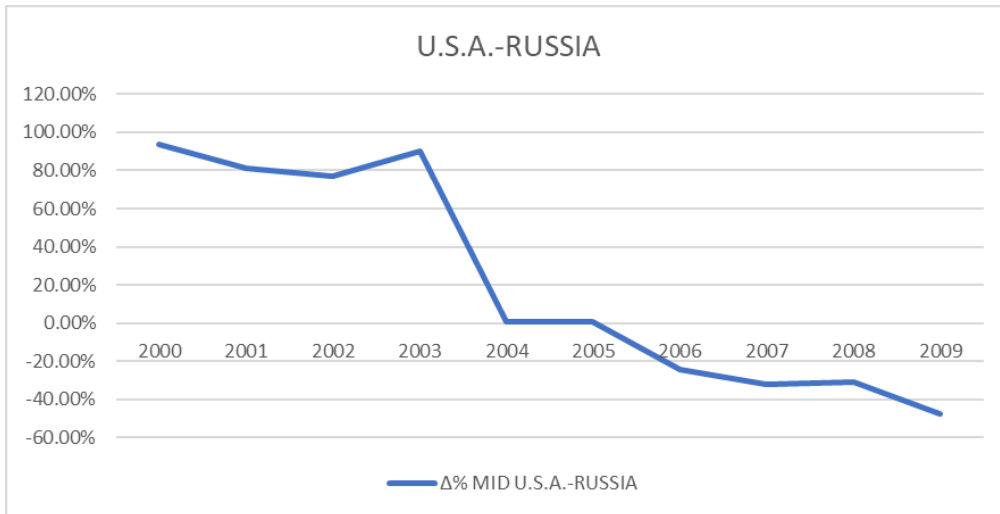
Figure 6.1 shows that contrary to the theory the FTA increases the likelihood of a Sino-American war from 2000-2003 but from 2004-2009 it decreases it in accordance with the peace creation effect. Very similar results hold for the pairs Russia-U.S.A., China-Japan and China-South Korea in Figures 6.2, 6,3 and 6.4 respectively.

**FIGURE 6.1**  
**MID PERCENTAGE CHANGE CHINA-U.S.A**

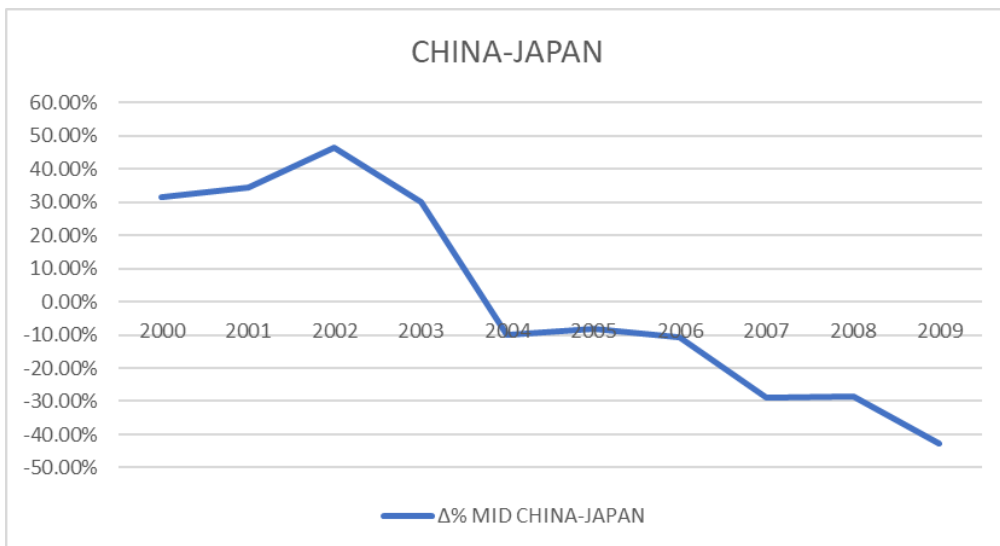




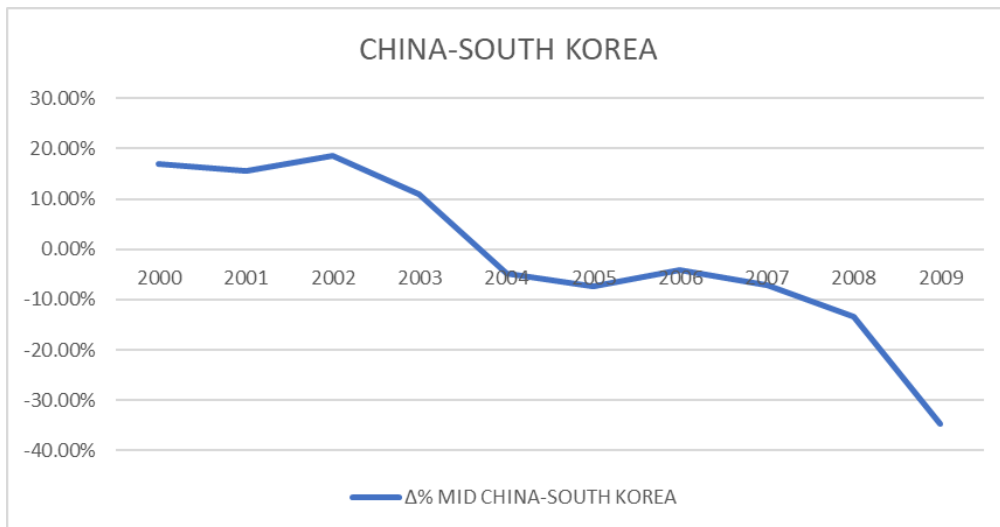
**FIGURE 6.2**  
**MID PERCENTAGE CHANGE U.S.A-RUSSIA (F.T.A. CHINA-U.S.A)**



**FIGURE 6.3**  
**MID PERCENTAGE CHANGE CHINA-JAPAN**



**FIGURE 6.4**  
**MID PERCENTAGE CHANGE CHINA-SOUTH KOREA**



## 6. Conclusions

In this paper, we investigate the impact of FTA and CU agreements on military interstate disputes borrowing the empirical methodology of Hadjiyiannis et al. (2016). Using the new data from COW project we have extended the examination period by a decade (1958-2010) compared to the aforementioned paper (1958-2000). Furthermore, we use the estimations to calculate probabilities of conflict in four hypothetical scenarios of Preferential Trade Agreements. In all scenarios, we assume that the change took place in 2000 estimating probabilities of conflict for the period 2000-2009. Our results verify the existence of the peace creation and peace diversion effects of Hadjiyiannis et al. (2016) for the new extended period.

In addition, the peace creation and peace diversion effects are demonstrated by most pairs that we have investigated under the four hypothetical scenarios estimated in the last part of our paper. Specifically, in the first scenario of the cancellation of the CU between the E.U. and Turkey, the probability of war between Turkey – Cyprus and Turkey – Greece increases significantly for the period 2000-2009. On the other hand, in the second scenario of Hard Brexit we find that it leads to an increase in the probability of dispute for the country-pairs U.K.-France and U.K.-Germany and to a decrease of the corresponding likelihood between France and Germany. The third scenario of a CU between Ukraine and E.U. increases the probability of war between Russia and Ukraine by 32,19% on average. Finally, an FTA between China and U.S.A. implemented at the beginning of the millennium seems to act in contrary to the theory at the beginning, while since 2004 it acts as a peace creation factor between them and between China and allies of U.S.A. in Asia as well.

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