How Does Economic Development Lead to Peace?: Economic Development and Interstate Armed Conflict, 1950-2011

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Zones of peace in the world are found to be where economically advanced democracies are grouped together. Indeed, these countries not only enjoy political freedom and economic affluence but also peaceful foreign relations. While numerous studies have advanced theoretical arguments and documented empirical evidence on the democratic peace, relatively scant attention has been paid to how economic development brings about international peace. Representative studies on the economic peace have shown serious theoretical and empirical loopholes in establishing the relationship between development and peace. This present study identifies four related but distinct explanations drawing upon the rich theoretical tradition of the economic peace encompassing both classical literature and modern scholarship. It also offers a more comprehensive test against the all dyad year data of 1950-2011. The findings show that the rate of armed conflict is lower for developed dyads than undeveloped dyads and mixed dyads. Developed countries rarely fight each other.

Keywords economic development, interstate armed conflict, democracy, economy, liberal peace

INTRODUCTION

Zones of peace are found in regions across the world with developed and democratic countries. These countries not only have maintained peaceful relations among themselves but also experienced no civil wars for many decades. Scholars have dubbed

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this current world phenomenon as liberal peace: developed capitalist democracies enjoy peace within themselves and with each other (Doyle 1986; Russett and Oneal 2000; Gartzke 2007). The notion of liberal peace *per se* is hardly new but it has a deep philosophical root. Many classical liberal thinkers have long envisioned freedom and prosperity as important and feasible paths to international peace (Doyle 1997). These thinkers can be divided into two traditions, political and economic. The political tradition emphasizes political development and democracy, including Rousseau, Bentham, and Kant, while the economic tradition includes Montesquieu, Paine, Smith, and Schumpeter, and highlights economic development and capitalism.

Contemporary scholarship has shown bifurcated interests in the political pacifism. Research on the democratic peace has been prevalent for the last several decades and it has withstood various theoretical, empirical, and methodological challenges. By contrast, research on economic pacifism has been relatively scarce, conceptually narrow, and methodologically flawed. Even extant research is unfruitfully competitive against the democratic peace research program as if the democratic peace could not be the case with the presence of the capitalist peace. Specifically, previous research in line with the economic liberal tradition fails to signify the development peace in multiple ways because of its competitive urge against the democratic peace. It goes astray from the direct independent pacifying effect of economic development and capitalism, narrowly conceptualizes and operationalizes capitalism and development, underspecifies the theoretical richness of the development peace, and provides little analytical and empirical benchmark on testing and finding. To address these gaps in extant research, this present study brings the direct pacific effect of economic development into the forefront. It aims to be a most comprehensive theoretical and empirical examination on the direct relationship between economic development and international peace. To enhance our understanding of the economic peace, the following three questions will be addressed:

- (1) Does economic development discourage interstate armed conflict?
- (2) Does the economic peace (democratic peace) supplant the democratic peace (economic peace) or does one exist independently from the other?
- (3) Do economic development and political development condition each other's effect on interstate armed conflict?

In this study, we argue that although related, the democratic peace and development peace are independent causal processes—democracy and development have independent influences on international peace— just as democracy and development are independent concepts and phenomena, although they are correlated (Przeworski et al. 2000; Acemoglu et al. 2008). We focus on the pacific effect of economic development from a perspective of economic liberalism. We aim to provide a comprehensive theoretical and empirical examination on the relationship between economic development and peace by highlighting the ample theoretical possibilities and applying best practice methodological standards. Specifically, we offer a theoretical discussion for whether, why and how economic development and capitalism affect international relations, both independent of and in relation to democracy. Our theoretical discussion highlights the encompassing theoretical tradition of economic liberalism from classical literature to contemporary scholarship. We test our theoretical expectations against all country dyad years from 1950 to 2011. Although this temporal domain is determined by the joint availability of the data on interstate armed conflict and development, it constitutes a more extended time period than in the current literature.

We apply the best econometric practices available for binary time-series crosssection data analysis and statistical interaction. We employ Beck et al.'s (1998) method to take account for the possible temporal dependence and cross-sectional heteroscedasticity. We correctly specify and interpret the possible statistical interaction of development and democracy, following advice from Braumoeller (2004) and Brambor et al. (2006). Our statistical analyses show that both development and democracy have a significant negative association with militarized interstate disputes. Yet, there is little statistical interaction between development and democracy in reducing interstate conflict. These results suggest that both classical economic liberals and political liberals are right in terms of proposing these two factors as important pathways to international peace. The results, however, call into question recent influential studies that argue that economic development supplants or conditions the democratic peace (Mousseau et al. 2003; Mousseau 2009; Hegre 2014).

THEORETICAL AND EMPIRICAL CAVEATS IN THE ECONOMIC PEACE LITERATURE

A plethora of theory and evidence has been documented for the pacific effects of democracy in contemporary scholarship. They argued that democracies rarely fight unnecessary and difficult wars; once involved in conflict, they fight harder, better, and quicker for victory than autocracies, and thus they try to avoid fighting each other in the first place (Reiter and Stam 1998; Gelpi and Griesdorf 2001; Park 2017).

As compared to the democratic peace, the pacifying effects of economic development are much more underspecified in the literature. Relatively scant scholastic attention is a first reason. The original finding by Babst (1972) refers to peace among economically advanced democracies, not just democracies. Therefore, it is unclear whether democracy or development drives Babst's (1972) finding. It is also possible that both democracy and development have independent net effects on peace. However, subsequent studies on the democratic peace rarely consider development as a control variable. This practice is problematic in that democracy and development have long been argued and found to be correlated with each other, although the causality between the two is ambiguous (Lipset 1959; Olson 1993; Acemoglu et al. 2008; Luo and Przeworski 2019). Therefore, the failure to control for development renders the democratic peace prone to omitted variable bias.

A noteworthy early exception is Bremer's (1992) path-breaking dyadic study that assesses the effects of both democracy and development together in one statistical equation with other war correlates, controlling for each other's effect. Democracy and development are found to be among the most important factors that reduced the chance of interstate war among countries pairs for the 1816-1965 period. Buhaug (2005) replicates the finding with advanced statistical techniques and extended study years from 1816 to 1993. However, Bremer (1992) and Buhaug (2005) leave more puzzles than they solve about the relationship between development and peace. There are two critical flaws. First, Bremer (1992) and Buhaug (2005) do not use a direct measure for economic development, but rather a proxy based on the information on iron and steel production, energy consumption, urban and total population from the National Material Capabilities dataset of the Correlates of War (COW) project (www.correlatesofwar.org). They roughly regard classify countries as developed if their economic capability is larger than their demographic capability. Furthermore, the revealed negative relationship between development and war is against Bremer's (1992, 317) original expectation drawing upon a Leninist thesis: "states more economically advanced tend to come into sharp conflict with one another as they compete for markets and resources in a largely zero-sum world." To address these issues, we will develop theoretical arguments for how economic development promotes interstate peace and utilize the available information on GDP per capita to assess the relationship with a direct measure.

A second reason concerns the theoretical and empirical loopholes that have been revealed in regard to exemplar studies that have a main focus on the pacifying effect of capitalism and development. Building upon Bremer's dyadic conflict model, these studies explore how capitalist development rather than democracy pacify interstate interactions. For instance, Gartzke (2007, 166) argues that "economic development, capital market integration, and the compatibility of foreign policy preferences supplant the effect of democracy in standard statistical tests of the democratic peace." Examining a sample of all dyad years from 1950 to 1992, his statistical analysis produces an insignificant effect for democracy but a significant effect for capitalistic development in predicting the absence and existence of military disputes between two states. Yet, Gartzke's (2007) finding hardly nullifies the democratic peace. First, his capitalist peace argument is silent about how capitalism causes democracy. Therefore, his assertion that capitalism accounts for the pacific effects attributed to democracy in the democratic peace scholarship has little theoretical ground. Furthermore, there are serious methodological issues with his statistical analysis. Dafoe (2011) conducts a replication analysis of Gartzke (2007) and reveals that censoring the data by using the IMF measure for financial openness, including atheoretical regional dummies, and misspecifying standard temporal dependence controls significantly reduce the variability of regime types in the data and the cross-sectional variability in war and peace. Therefore, what drives the null result for democracy in Gartzke's (2007) analysis is not the inclusion of the economic variables but the improper model specification.

Mousseau (2009; 2013) has argued that impersonal contract-intensive economies generate market norms that promote wealth, democracy, and peace. Mousseau (2009, 53) finds that for the 1961-2001 period, "not a single fatal conflict occurred among nations with contract-intensive economies..." whereas "democracies without contractintensive economies engaged each other in several fatal conflicts...." His interaction analysis shows that the democratic peace is spurious because economic institutions cause both democracy and peace. But this inference is based on a misunderstanding of basic statistical interaction. The presence of economic variables never wipes out the significance of democracy in Mousseau's (2009) statistical models. Rather, the

significant interaction effect indicates both that the degree to which democracy exerts pacific effects on interstate interactions depends on a contracting economy and that the degree to which a contracting economy induces interstate produces peaceful impacts on international relations (Braumoeller 2004; Brambor et al. 2006). Later, Mousseau (2011) does not use any interaction term between democracy and contracting economy, noting that doing so lacks "theoretical justification." In this study, life insurance per capita, the measure for a contracting economy, has a significant association with peace while democracy is insignificant. However, Dafoe et al. (2013) convincingly show that the insignificant result for the democratic peace in Mousseau (2011) is driven by three methodological errors: (1) selecting the dependent variable by coding an ongoing conflict as no conflict, (2) employing a misleading specification for joint democracy, and (3) imputing over 90% of the data for the main independent variable due to extensive missing values with the life insurance information. Addressing any one of the issues brings back the statistical significance for the democratic peace. There are also two serious problems concerning causality in Mousseau (2009; 2013). First, there is little theoretical rationale that a contracting economic culture and life insurance subscriptions unilaterally promote democratic institutions. It is at least equally plausible that democracy and the rule of law help create institutional environments conducive to active economic contracting activities such as purchasing life insurance from strangers. Second, an increase in per capita income seems to come before an increase in per capita life insurance expenditure: wealthy individuals tend to be better able to afford life insurance than poor individuals. Likewise, GDP per capita should better constitute a measure for economic development than life insurance per capita.

As such, existing studies in line with the economic liberal tradition has heavily focused on nullifying the democratic peace via narrowly defined economic measures for development and capitalism such as the levels of financial openness and per capita expenditures on life insurance. This competitive practice has significantly deterred the research program of liberal peace from identifying, probing, and testing a multitude of mechanisms that economic development and capitalism shape interstate interactions among countries, whether independently or conditionally with political development and democracy. Theoretical explanations for how and why also remain underspecified. These theoretical and empirical issues must be addressed to enhance our understanding of liberal peace.

In this study, we try to overcome the weaknesses and limitations from the previous research in several ways. First, we theorize the net pacific effect of economic development drawing upon the insights from the rich theoretical tradition of economic liberalism. In doing so, we do not treat the democratic peace as rivalrous to the economic peace. We do not treat the economic peace as limiting or supplanting the democratic peace. One does not have to supplant another to be effective. Rather, both of the democratic peace and economic peace can exist independently and separately from each other, although still be related. Second, we provide a sound econometric analysis free from the problems in the previous research associated with model misspecification, excessive missing and imputing in data, wrong inference on statistical interaction. Third, we operationalize economic development in terms of GDP per capita to account for its attributes and aspects more precisely and to a wider extent as compared to the previous

research.

It should be noted that this study is not entirely the first to measure economic development and capitalism in terms of GDP per capita in the liberal peace literature. However, the analytical focus of these studies is not on how development affects interstate conflict as a main independent variable but on how development conditions the effects of democracy and trade on interstate conflict as an interacting variable. Additionally, evidence for development, whether its net effect or interactive effect on conflict, is quite inconsistent in these studies. Extending the ending year of these studies, 1992, is another way this present study improves upon past research to get more conclusive evidence. Our statistical analysis will cover dyad year data for the 1950-2011 period.

HOW DEVELOPMENT LEADS TO PEACE

Economic pacifism is based on the idea that "market societies are fundamentally against war.... [because] war does not pay for commercial manufacturing societies" (Doyle 1997). It can be traced back to classical thinkers like Adam Smith, the forefather of economic liberalism, and Thomas Paine, the radical American democrat. For instance, Smith (1776) argues that individual pursuit of wealth leads to not only material satisfaction but also cognitive rationalization and moral perfection by exercising the freedom to choose.

Joseph Schumpeter advances the Smithian pacifism in a more concrete but restricted manner. Similar to Smithian manufacturers, Schumpeterian individuals thinks that war is economically irrational since they gain almost nothing from it. Everyday their time and energy are consumed in manufacturing, selling and buying. Indeed, capitalism enables citizens to eschew delusional militarism and paranoid chauvinism. However, capitalism may not be singly an effective force for peace if war profiteers and military aristocrats who gain from war still exercise influence over citizens. For Schumpeter, democracy is a prerequisite for capitalism to exert its pacific effect. On this point, he diverges from his descendent proponents of the capitalist peace who try to limit the extent of the democratic peace or invalidate its existence per se in terms of the capitalist peace. They argue that the pacific effect of democracy is either dependent on or spurious to capitalism and economic development (Mousseau et al. 2003; Gartzke 2007; Mousseau 2009; Hegre 2014).

In Schumpeter's theorization of the liberal peace, capitalism positively affects democracy but capitalism alone cannot dissipate the zeal of imperialist wars. Schumpeter emphasizes that a majoritarian rule is unlikely to accept the high risks and costs associated with military adventures to only benefit a small portion of interested groups, saber rattlers, and warmongers (e.g. Kant 1795; Bueno de Mesquita et al. 2005). Schumpeter believes that democratic capitalism, the combination of capitalism and democracy, and neither capitalism nor democracy alone, can fully exert their peace-inducing effect by abolishing imperialistic atavisms left over from the old days of monarchical wars. Thus, we can expect that developed democracies, and underdeveloped

autocracies.

We can also draw upon contemporary scholarship to identify arguments for why war is uneconomic for wealthy capitalist countries. We briefly explore four mechanisms. First, war mobilization is hardly justifiable in liberal economies. War has become much more destructive and costlier in the modern era. Successful, or even only unfailing, conduct of war requires significant mobilization of material and human resources that can be otherwise much more productively used in developed societies. Preparing for aggression and fortifying defense, too, increases expenditures, incurring a suboptimal allocation of scare resources (Park 2017). Second, with economic development, the values of conquerable resources decline while attracting intellectual and financial capital becomes much more important for productivity and profitability (Rosecrance 1986). Economic transformations among highly advanced countries devalue land, natural resources, and manual labor in favor of intellectual property, financial asset, and service-information economy (Rosecrance 2000). The continuous drain on the supply of young men makes conquest war highly uneconomic as they otherwise could be trained for finance, creativity and productivity. Additionally, soldiers become expensive as the wealth of a country increases with its economic development. Conquering and managing a territory becomes increasingly costly with development while as Gartzke (2007, 172) notes, advanced economies are "better off outsourcing occupation to local leaders and obtaining needed goods through trade."

Third, in a similar vein, the wealth per se that comes with economic development increases the societal unwillingness against war. Gat (2005) argues that rising income per capita provides a wide range of members of the society with the luxuries of wealth, comfort, and other amenities that only a minimum number of the privileged afforded to enjoy. Satiated by the comforts and luxuries and freed from manual labor, most members of the society will find it extremely difficult to endure the adversities of war. The affluence, comfort, and sedentary life conflict with the physical hardship and wilderness in the battlefield. Thereby, war and associated hardships "become more alien and unappealing" to developed societies (Gat 2005, 89). Cultural sophistication and respect for differences cultivated by wealth and education are another kind of route via which the general mood of the society becomes increasingly scornful of violent pursuit of interests by fighting and conquering. The affluence of resources resulted from growing wealth allows a large portion of the society to long for education, cultural literacy, enjoyment of arts and sports, fashion, and various self-fulfillment activities. The sheer savagery of war, its very destructiveness, its physical and mental costs, and its lingering aftermaths will make it rationally unthinkable and ridiculous to advanced societies (Doyle 2012).

Finally, foreign policy compatibility has been identified as an important element for peaceful relations among states (Farber and Gowa 1997; Gartzke 1998; Park 2013). Continuous international hostilities with other countries do not help economic development (Lee 2018). Advanced countries must have practiced the convergence of foreign policy preferences in pursuit of long-term and stable economic development. Besides, advanced economies share interests in the stability of the world economy as they have been more integrated into global markets through international finance and foreign direct investment. Hostile international situations shrink economic activities throughout global markets in many respects as political instabilities and hostilities, whether domestic or international, are found to spark market repercussions both domestically and internationally. Therefore, developed countries have motivation to converge foreign policy preferences among one another. Even when they have incompatible interests on contentious issues such as territorial claims and resource competition, institutions and changes in the modern world political economy make these dissimilarities something to be managed rather than fought about (Keohane 1984; Simmons 2005; Gartzke 2007). Indeed, traditional competition and relative gain concerns among countries seem to have become increasingly less relevant for highly advanced market economies as the health and growth of the global economy are in everyone's interests (Mousseau 2013). In sum, peace rather than war becomes profitable, enjoyable, desirable, and compatible among countries that have been developed with the modern capitalist world economy.

We acknowledge some counter-arguments from skeptics suggesting that interstate wars are frequent with advanced economies. Socialist theorists like Hobson (1902) and Lenin (1916) view advanced capitalism as "the taproot of imperialism." With economic development, advanced economies become in need of expansion for markets and resources. Since seeking and acquiring outside markets and resources is largely done in a zero-sum manner, competitive capitalist economies will come into sharp conflict with each other. Economic development involves larger quantity and higher diversification for the factors of production and its outputs. This feature acts as a pressure for advanced states to aggressively search for resources and markets abroad. When it occurs concurrently in many advanced economies, armed conflicts among them are more likely to occur.

As Bremer (1992) suggests an increased chance for mixed dyads to come into violent conflict as an advanced economy pillages an underdeveloped economy while an exploited economy tries to shatter the yoke of impoverishment against an advanced economy. There are two other reasons for hostile relations among mixed dyads. One is that a pair of two undeveloped economies are in general more likely to share policy affinities than pairs of one developed and one undeveloped economies. Another reason is that underdeveloped countries may constitute easy and winnable targets for some developed countries with militaristic ambitions. If they need foreign military adventures for any reasons, developed countries should choose underdeveloped countries rather than other developed ones. Development comes with affluent material resources, advanced technologies, and efficient use of resources, all of which enhance the fighting abilities of countries and their potential military power (Gowa and Mansfield 1993; Gartzke 2007; Park and Moon 2018). The wide gap in power between developed economies and underdeveloped economies increases the chance that developed countries attack underdeveloped countries.

HYPOTHESES

What have been discussed in the theory section give us the following four testable hypotheses:

H1. Interstate military confrontations are less likely to occur between developed countries.

H2. Interstate armed conflict is more likely to occur between pairs of developed countries than any other combinations of country pairs.

H3. The pacifying effect of economic development is even stronger between democratic countries.

H4. Interstate armed conflict is more likely to occur between mixed pairs consisting of one developed and one underdeveloped than any other combinations of country pairs.

RESEARCH DESIGN

We use the industrial standards for dyad conflict analysis in the literature (Bennett and Stam 2000; Dafoe 2011; Park 2013). Our statistical analysis covers all dyad years from 1950 to 2011, for which both of our conflict and development variables are jointly available. This temporal domain is the most extensive among the studies that use a direct measure for economic development or capitalism to predict interstate armed conflict. Since our data are structured in the form of binary time-series cross-section frame, we employ logit to regress the occurrence and nonoccurrence of our binary dependent variable in a given dyad year against our independent and control variables. To account for the possible time-series autocorrelation and cross-dyadic heteroscedasticity, we use the peace year splines and robust standard errors (Beck et al. 1998). The peace year variable is also important to control for, because peace begets peace and also peace tends to go with development and democracy. To avoid the possible endogeneity that the dependent variable influences the independent variables, we lag all the independent variables by one year, as standard in the literature (Dafoe et al. 2013).

As is also standard, we measure our dependent variable for interstate conflict in terms of militarized interstate disputes (MIDs) based on the information from the dyadic MID dataset (v.3.1) of the COW project. MIDs are defined as "the threat, display, and actual use of military force... by at least one state "explicitly directed towards the government, official representative, official forces, property, or territory of another state" (Jones et al. 1996, 163). We code 1 if a MID newly occurs in a given dyad year, and 0 otherwise. We drop dyad-year observations out of the analysis to secure the independence of observations if an MID is still ongoing from a past year onset or any of two countries in a dyad is not original participants (Bennet and Stam 2000). We call this variable MID Onset.

Our main independent variable is economic development measured in terms of GDP per capita. We measure development as national GDP per capita from Gleditsch's Expanded Trade and GDP Data and interstate conflict as militarized interstate disputes (MIDs) from the Correlates of War Project (Gleditsch 2002). The use of GDP per capita is not only standard in the literature on economic development and democracy but also it has multiple advantages over other narrowly defined alternatives in previous research (Acemoglu et al. 2008; Boix 2011; Treisman 2015). First, the GDP data cover an extensive range of cross-national time-series information including almost all independent countries over 60 years since 1950. This is contra the World Bank information on life insurance and the IMF information on financial openness, used in two of the most well-

Variable	Mean	Std. Dev.	Minimum	Maximum
MID Onset	.0021	.0465	0	1
Fatal Onset	.0004	.0218	0	1
Lower Development	3335.597	4598.387	132.82	440898
Higher Development	13703.24	24764.09	246.79	632239.5
Lower Democracy	-3.177	6.272	-10	10
Higher Democracy	4.589	6.363	-10	10
Alliance	.0708	.2566	0	1
Major Dyad	.0676	.2511	0	1
Capability Ratio	40.480	251.168	1.000	16003.4
Contiguity	.0289	.1676	0	1
Distance	8.1100	1.3125	0	9.4212
Peace Year	562,512	23.311	15.886	0
N = 562,512				

Table 1. Summary Statistics, 1950-2011

known recent studies (Mousseau 2013; Gartzke 2007). These measures are available for only a handful of countries and years, generating an overwhelming portion of missing values for the entire data. Second, a macro-level overall measure for development and capitalism is better to comprehend the economic aspects of liberal peace than a microlevel characteristic measure for market economies. As Bremer (1992, 311) notes, "with few exceptions over the last 2 centuries, all more advanced states also been capitalistic." Third, according to economic liberal theory, wealth per se is a route to peace as well as an indicator of development by generating societal abhorrence of military adventures abroad (Gat 2005; Gartzke 2007).

GDP per capita is inherently monadic. To create a dyadic measure, we take the lower GDP per capita values between two states in a given dyad year, following the weak link assumption that the occurrence of conflict is a function of a less constrained state in a given dyad (Russett and Oneal 2000). We call this variable as Lower Development. In addition, to test and account for the conflictual effect of mixed dyads, we employ the higher GDP per capita value of two states. We call this variable as Higher Development. We control for the effect of dyadic democracy since many scholars consider the democratic peace as rivalrous to the economic peace. We take the lower value between two states to measure dyadic democracy based on the 21-point index of the Polity IV project ranging from -10 (full autocracy) to 10 (full democracy). This variable is called as Lower Democracy. We also include Higher Democracy measured as the higher value of two countries' polity scores. Including both higher and lower values of the polity scores serves to control for the cat-and-dog effect of mixed dyads (Oneal and Russett 2005). To test the hypothesized interaction of democracy and development, we employ the multiplication of Lower Development and Lower Democracy, LowerDev×LowerDem.

Standard correlates for interstate conflict are controlled for in our statistical models. Capability Ratio indicates the degree of relative power between two states, measured as the natural logarithm of the higher and lower ratio between two states in a given dyad year. We use the Composite Index of National Capabilities of the COW project for each state's military capability. Contiguity indicates whether two states in a dyad are contiguous by land or within 150 miles of sea. 1 is coded for contiguity, and 0 otherwise. Distance is the log of the great circle distance in miles between the two capitals in a dyad. Major Power measures whether or a dyad includes at least one major power state in a given year. We code 1 for such a case, and 0 otherwise. Alliance denotes whether an alliance exist between two states in a given dyad year in the form of defense pact, neutrality or entente. We code 1 for an alliance, and 0 otherwise based on the information of the COW Alliance data. As is common in the literature, we expect a positive effect on conflict for Major Power and Contiguity but a negative effect for Capability Ratio, Distance, and Alliance.

RESULTS

The summary statistics for all of our dependent and independent variables appear in Table 1. The mean, standard deviation, minimum, and maximum values are based on the sample used in the regression models in Table 2.

In Table 2 reported are the test results for the effects of the independent variables on MIDs. Model 1 tests the independent net effect of Lower Development on MID Onset controlling for Lower Democracy and other controls. The estimated coefficient for Lower Development is negative and statistically significant at the 1% level. This result suggests that on average, the rate of armed conflict is lower for a dyad of two developed economies than a mixed dyad (developed and undeveloped) and a dyad of two undeveloped economies. The data support Hypothesis 1, implying that economic development promotes interstate peace. Contrastingly, the data are unsupportive of Hypothesis 2 for the conflict-generating effect of economic development. Unlike the Leninist or socialist expectation, economic development does not foment interstate competitions for hostilities but encourage peaceful relations among countries. We can say that "developed dyads rarely fight each other," which is the phrase that has been monopolized to characterize the peacefulness of democratic dyads.

Lower Democracy, meanwhile, has a significant negative impact on MIDs at the 0.001 level, indicating that democratic dyads are more peaceful than other regime types of dyads. This significant result for the pacific effect of joint democracy is produced while controlling for the economic development, despite the skepticism that the democratic peace is spurious to the economic peace (Gartzke 2007; Mousseau 2013). Indeed, the results show that economic development to wealth and political development to democracy are two related but independent path ways to international peace. Therefore, both classical economic and political liberals like Smith (1776) and Kant (1795) were right in predicting the gradual expansion of capitalist economies and democratic governments across the globe over time. These classical philosophers correctly predicted the positive implications of capitalism and democracy for world

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Variables	Model 1	Model 2	Model 3
Lower Development	-2.63e-05*** (9.54e-06)	-0.00003***	-3.61E-05**** (1.08E-05)
Higher Development			2.17E-06**** (5.35E-07)
Lower Democracy	-0.0405****	-0.0340***	-0.0657****
	(0.0097)	0.01074	(0.0103)
Higher Democracy			4.78E-02**** (0.0095)
Development× Democracy		-1.11e-06 (9.48e-07)	
Alliance	0.2070	0.2025	0.2822**
	(0.1399)	(0.1399)	(0.1380)
Major Dyad	1.7352****	1.7546****	1.6647****
	(0.2108)	(0.2141)	(0.2032)
Capability Ratio	-0.0025**	-0.0025**	-0.0024**
	(0.0013)	(0.0013)	(0.0012)
Contiguity	3.4139****	3.4135****	3.4684****
	(0.2082)	(0.2074)	(0.2085)
Distance	-0.0705****	-0.0717****	-0.0839****
	(0.0201)	(0.0201)	(0.0211)
Peace Year	-0.2488****	-0.2489****	-0.2425****
	(0.0214)	(0.0214)	(0.0208)
Spline 1	-0.0007****	-0.0007****	-0.0007****
	(0.0002)	(0.0002)	(0.0002)
Spline 2	0.0003**	0.0003**	0.0003**
	(0.0001)	(0.0001)	(0.0001)
Spline 3	2.87e-05	0.00002	1.67e-05
	(6.54e-05)	(6.55e-05)	(6.52E-05)
N	562512	562512	562512
Log-likelihood	-5618.8903	-5617.9469	-5579.8541
Pseudo R ²	0.3538	0.3539	0.3583
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 Table 2. The Effect of Economic Development on MID Onset, all dyads (1950-2011)

*p<0.1, **p<0.05, ***p<0.001, ****p<0.0001 (two-tailed). Robust standard errors clustered on dyad are in parentheses.

peace.

Described in the two plots of Figure 1 are the changes in the predicted probabilities of MID Onset that are made when the two liberal variables are toggled across their ranges while all other variables are set to their means. As seen in Plot A, the probability



Figure 1. The changes in the predicted probabilities of MID Onset.

of armed conflict decreases as the dyadic level of economic development increases. Similarly, in Plot B, the likelihood of military conflict falls when the joint level of economic development rises. Substantively, Lower Development, on average during the 1950-2011 period, reduces the likelihood of MID Onset by about 17% as it moves from its 10 percentile value to its 90 percentile value (from \$655 to \$7580 in 2006 US dollars). Lower Democracy decreases the chance of MID Onset by about 55% as it changes from its minimum value -10 (full autocracy) to its maximum 10 (full democracy). One standard deviation change (from -0.5 std. to +0.5 std.) around the mean abates the probability of MID Onset by 11.4% for Lower Development and 22.4% for Lower Democracy.

Model 2 tests the interactive effects of economic development and political development in affecting interstate armed conflict. The first order terms, Lower Development and Lower Democracy are statistically significant at the 0.01 level in the expected direction. However, these results alone carry little meaning as a first order coefficient only refer to the effect of one variable on the dependent variable when the other is set to a zero value (Braumoeller 2004; Brambor et al. 2006). 0 is the center value for the 21-point scale (-10 to 10) of the Polity index while 0 does not exist for the per capita GDP data. Therefore, the coefficient for the multiplicative interactive term of Lower Development and Lower Democracy should be considered. The estimated coefficient for LowerDev×LowerDem, however, is not statistically significant although its negative sign suggests that development and democracy strengthen each other's peace-inducing effect. The data do not show a significant synergistic interaction between the two liberal factors in pacifying international relations. Therefore, Hypothesis 3 is not supported.

The hostile effect of development imbalance suggested in Hypothesis 4 is tested with Model 3. The estimated coefficient for Higher Development is in the expected direction with a statistical significance at the 0.001 level. This result suggests that the gap in economic development between two states in a dyad increases the probability of MID Onset in a given year. Meanwhile, the negative impact of Lower Democracy on MID Onset is estimated to be stronger controlling for the positive effect of Higher

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Variables	Model 4	Model 5	Model 6
Lower Development	-7.39e-05**	-9.91e-05**	-0.0001**
	(3.35e-05)	(4.44e-05)	(4.04e-05)
Higher Development			3.75e-06**** (9.11e-07)
Lower Democracy	-0.0456**	-0.0169	-0.0786****
	(0.0193)	(0.0196)	(0.0189)
Higher Democracy			0.0635**** (0.0173)
Development× Democracy		-7.01e-06 (4.42e-06)	
Alliance	-0.0598	-0.0791	0.0535
	(0.2218)	(0.2230)	(0.2165)
Major Dyad	1.1592****	1.2280****	1.0306***
	(0.3532)	(0.3566)	(0.3638)
Capability Ratio	-0.0053	-0.0056	-0.0050
	(0.0035)	(0.0036)	(0.0035)
Contiguity	2.9710****	2.9575****	3.0618****
	(0.4022)	(0.3998)	(0.3963)
Distance	-0.1642****	-0.1691****	-0.1781****
	(0.0410)	(0.0407)	(0.0423)
Peace Year	-0.2834****	-0.2829****	-0.2704****
	(0.0421)	(0.0421)	(0.0400)
Spline 1	-0.0010***	-0.0010***	-0.0009***
	(0.0003)	(0.0003)	(0.0003)
Spline 2	0.0005*	0.0006*	0.0005*
	(0.0003)	(0.0003)	(0.0003)
Spline 3	-7.52e-05	-0.0001	-0.0001
	(0.0001)	(0.0001)	(0.0001)
N	562764	562764	562764
Log-likelihood	-1535.2424	-1532.8746	-15170298
Pseudo R2	0.3399	0.3409	0.3476

Table 3. The Effect of Economic Develo	opment on Fatal MID Or	nset, all dyads (1950-2011)
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*p<0.1, **p<0.05, ***p<0.001, ****p<0.0001 (two-tailed). Robust standard errors clustered on dyad are in parentheses.

Democracy on MID Onset because its estimated coefficient is greater in Model 3 than in Model 1. Thus, for precisely testing the peaceable effect of developed dyads (developed and developed), it is important to consider the belligerent effect of imbalanced dyads (developed vs undeveloped) distinct from undeveloped dyads (undeveloped and undeveloped). In a similar vein, we also control for the effect of imbalanced dyads in regard to joint democracy. Higher Democracy has a positive significant impact on MID

Variables	Model 4	Model 5	Model 6
Lower Development	-3.35e05****	-3.35-05****	-4.63e-05****
	(9.61E-06)	(1.0-e05)	(1.15e-05)
Higher Development			3.65E-06**** (7.25e-07)
Lower Democracy	-0.0298****	-0.0300***	-0.0528****
	(0.0083)	(0.0104)	(0.0086)
Higher Democracy			0.0483**** (0.0092)
Development× Democracy		3.31E-08 (1.06E-06)	
Alliance	0.0357	0.03583	0.1122
	(0.1141)	(0.1139)	(0.1121)
Major Dyad	0.5507****	0.5501****	0.4811***
	(0.1523)	(0.1526)	(0.1548)
Capability Ratio	-0.0033***	-0.0033***	-0.0032**
	(0.0013)	(0.0013)	(0.0012)
Contiguity	1.6940****	1.6936****	1.7999****
	(0.2168)	(0.2158)	(0.2183)
Distance	-0.0283* (0.0171)	-0.0283 (0.0174)	-0.0440805
Peace Year	-0.2584****	-0.2584****	-0.2516****
	(0.0215)	(0.0215)	(0.0208)
Spline 1	-0.0008****	-0.0008****	-0.0008****
	(0.0002)	(0.0002)	(0.0002)
Spline 2	0.0004**	0.0004**	0.0004**
	(0.0002)	(0.0002)	(0.0002)
Spline 3	1.14-e05	1.15-e05	-9.05E-07
	(7.65E-05)	(7.7-e05)	(7.63-e05)
Ν	55854	55854	55,854
Log-likelihood	-4142.8167	-4142.8161	-4108.2528
Pseudo R ²	0.2229	0.2229	0.2294

Table 4. The Effect of Economic Development on MID Onset, relevant dyads (1950-2011)

*p<0.1, **p<0.05, ***p<0.001, ****p<0.0001 (two-tailed). Robust standard errors clustered on dyad are in parentheses.

onset at the 0.001 level, suggesting that the interactions of democracies and autocracies are cats-and-dogs like. Similar to Lower Development, the estimated coefficient for Lower Democracy is larger with the presence of Higher Democracy in Model 3. It appears that democratic dyads are more peaceful than autocratic dyads followed by

mixed dyads.

As a robustness check, we reanalyze the net and interactive effects of development and democracy against fatal MIDs, in which at least one battel death occurs from either side of two disputants, through Models 4, 5 and 6 in Table 3. We code 1 only for Fatal Onset, and 0 otherwise. The net results for Lower Development and Lower Democracy remain pacific as they both have a negative significant impact on Fatal Onset at the 0.05 level in Model 4. The interactive effect of Lower Development and Lower Democracy remains insignificant in Model 5. The effects of imbalanced dyads in terms of both development levels and regime types remain qualitatively positive and significant in Model 6 as both Higher Development and Higher Democracy are negative and statistically significant.

Additionally, we run all the three models against politically relevant dyads in Table 4 that are considered as having a more reasonable chance of conflict and militarization. Politically relevant dyads include those in which two states are contiguous by land or within 400 miles of water and at least one country possesses a major power status in a given dyad year. The data for relevant dyads produce basically the same results for Lower Development and Lower Democracy as those in the previous tables. Both development and democracy have a significant impact on armed conflict. The interactive term of Lower Development and Lower Democracy continues to be insignificant in Model 8 and thus their conflict-reducing effect does not depend on one another. The estimated coefficients for Higher Development and Higher Democracy remain positive and significant and thus mixed dyads are more conflict-prone than autocratic dyads and democratic dyads.

In sum, the results from Tables 2, 3 and 4 are consistent. Indeed, economic development to wealth and political development to democracy appear to be two important pathways toward international peace. Therefore, we can conclude that both political liberals and economic liberals from classical to modern eras, are right in vouching for capitalism and democracy as liberal pacifiers.

With respect to the control variables, the results, in general, are significant in the expected directions across all models, except for Alliance. Imbalance in power, geographic distance, peaceful past, and absence of major power abate interstate hostilities. Overall, Distance and Peace Year have a statistically significant negative impact on military conflict throughout the models. Capability Ratio appears to reduce the probability of MID Onset, but its negative impact on conflict is not statistically significant with Fatal Onset. The effects for Major Power and Contiguity are statistically significant and positive across all models. Contiguous dyads are more likely to experience an MID onset whether fatal or nonfatal than are noncontiguous dyads. Dyads of non-major powers are more conflict-free than dyads including a major power. Evidence for interstate alliance is inconsistent. The estimated coefficient sign for Alliance differs across specifications and it is never significant in any models. Alliance, once again, turns out not to be a robust correlate of interstate conflict (Bennett and Stam 2000; Park 2013).

CONCLUSION

The world has been increasingly liberalized politically and economically while interstate wars have become almost obsolete. How democracy helps pacify interstate relations has been well documented by both theoretical and empirical research. The presumed peaceful effect of economic development has been relatively underexplored in the literature. Most well-known studies of infrequent previous research emphasize certain subset aspects of economic development and capitalism (Gartzke 2007; Mousseau 2013). They atheoretically treat the economic peace as if it could not coexist with the democratic peace while being silent about how economic development subsumes political development. Their statistical analyses suffer from serious model misspecification and excessive imputation of missing values that arbitrarily reduce the variability of covariates. Other relevant studies use indirect proxy measures for development or concern the possible indirect way development affects peace by conditioning the pacific effect of democracy (Bremer 1992; Hegre 2014; Mousseau et al. 2003; Buhaug 2005).

This present study intends to be a most comprehensively focused examination on the relationship between economic development and peace. Theoretically, it has offered explanations for whether, how, and why economic development pacifies interstate relations, highlighting the rich theoretical tradition of economic liberalism on the subject from classical literature to modern scholarship. First, individual pursuit of wealth in capitalist societies promote diligence, rational calculation, material satisfaction, freedom of choice and even moral perfection, which in turn increases the societal abhorrence of war because of the moral and opportunity costs involved in the system of war. Second, war is also highly uneconomic in with highly advanced economies that value market efficiency, intellectual property, financial capital, and information service over conquerable resources like land, natural resources, and manual labor. Third, increased wealth with development, resulting comforts and amenities increase the societal unwillingness to fight war against foreign countries. Fourth, advanced economies share foreign policy preferences in political and economic international affairs with each other more than others.

The results show that both the democratic peace and the economic peace are, although related, statistically meaningful independent phenomena. In all models, joint democracy has a significant negative effect on interstate armed conflict, controlling for joint development. This is the case with joint economic development that significantly reduces the probability of armed conflict between states. Therefore, unlike the skepticism in previous research, our test shows that one liberal factor does not supplant the other as each possesses its own net, independent effect in pacifying interstate relations. However, our interactive analysis shows no support for the interactive effect of development and democracy. One factor hardly conditions or strengthens the other's effect on peace. The multiplicative interaction term for development and democracy is never significant in any specifications.

The finding from this present study has an important implication for the current world that has been increasingly globalized in terms of political liberalization and economic integration. It can be expected that the future world will be more peaceful with more economic and political globalization. However, other forms of human violence such as terrorism and civil war still remain serious international issues. This regards an implication for future research. It will be fruitful to examine how economic development affects terrorism and civil war. The terrorism literature, rather, concerns how terrorism affects economic growth whereas few studies look at the effect of economic development on terrorism with little consensual evidence (Caruso and Schneider 2011). Most of civil wars have occurred in undeveloped and poor countries, which is an established fact. However, surprisingly little rigorous and thorough exploration has been accomplished about identifying the causal mechanisms for the dampening effect of economic development on civil war in the relevant literature since a few seminal studies (Collier and Hoeffler 1998; Fearon and Laitin 2003).

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