

Grasping the scientific evidence: The contractualist peace supersedes the democratic peace

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Abstract

This article draws on new data and analyses to investigate whether the contractualist peace supersedes the democratic peace. A series of studies have shown that contractualist economy accounts for the democratic peace, but defenders of the democratic peace claim that these studies contain measurement errors, that democracy correlates with peace at least in interaction with contractualist economy, and that the causation is reversed from democracy to contractualist economy and peace. Results are consistent across all tests: there is no support for democracy as a cause of peace. The democratic peace is a statistical artifact explained by contractualist economy.

Keywords

Democratic peace, interstate conflict processes, liberal peace, political economy of conflict, war

A weighty controversy has enveloped the study of international conflict: whether the democratic peace, the observed dearth of militarized conflict between democratic nations, may be spurious and accounted for by institutionalized market “contractualist” economy. I have offered theory and evidence that economic norms, specifically contractualist economy, appear to account for both the explanans (democracy) and the explanandum (peace) in the democratic peace research program (Mousseau, 2009, 2012a, 2013; see also Mousseau et al., 2013a, b). Five studies have responded with several arguments for why we should continue to believe that democracy causes peace (Dafoe, 2011; Dafoe and Russett, 2013; Dafoe et al., 2013; Ray, 2013; Russett, 2010).

Resolution of this controversy is fundamental to the study and practice of international relations. The observation of democratic peace is “the closest thing we have to an empirical law” in the study of global politics (Levy, 1988: 662), and carries the profound implication that the spread of democracy will end war. New economic norms theory, on the other hand, yields the contrary implication that universal democracy will not end war. Instead, it is market-oriented development that creates a culture of contracting, and this culture

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legitimizes democracy within nations and causes peace among them. The policy implications could hardly be more divergent: to end war (and support democracy), the contractualist democracies should promote the *economies* of nations at risk (Krieger and Meierrieks, 2015; Meierrieks, 2012; Mousseau, 2000, 2009, 2012a, 2013; Nieman, 2015).

In the literature are five factual claims for why we should continue to believe that democracy causes peace: (1) an assertion that in three of the five studies that overturned the democratic peace (Mousseau, 2013; Mousseau et al., 2013a, b), the insignificance of democracy controlling for contractualist economy is due to the treatment of missing data for contractualist economy (Dafoe et al., 2013, henceforth DOR); (2) a claim of error in the measure for conflict (DOR) that appears in one of the five studies that overturned the democratic peace (Mousseau, 2013); (3) an alleged misinterpretation of an interaction term that appears in one of the five studies (Mousseau, 2009) that overturned the democratic peace, along with in inference of democratic causality from an interaction of democracy with contractualist economy (Dafoe and Russett, 2013; DOR); (4) a claim of reverse causality, of democracy causing contractualist economy (Ray, 2013); and (5) a report of multiple regressions with most said to show democratic significance after controlling for contractualist economy (DOR).

This study investigates all five of these factual claims. I begin by addressing the issue of missing data by constructing two entirely new measures for contractualist economy. I then take up possible measurement error in the dependent variable by reporting tests using both my own (Mousseau, 2013) and DOR's measures for conflict. Next, I disaggregate the data to investigate a causal interaction of democracy with contractualist economy. I then examine the evidence for reverse causality, and scrutinize the competing test models to pinpoint the exact factors that can account for differences in test outcomes.

The results are consistent across all tests: there is no credible evidence supporting democracy as a cause of peace. Using DOR's base model, the impact of democracy is zero regardless of how contractualist economy or interstate conflict is measured. There is no misinterpreted interaction term in any study that has overturned the democratic peace, and the disaggregation of the data yields no support for a causal interaction of democracy with contractualist economy. Ray's (2013) evidence for reverse causality from democracy to contractualist economy is shown to be based on an erroneous research design. And of DOR's 120 separate regressions that consider contractualist economy, 116 contain controversial measurement and specification practices; the remaining four are analyses of all (fatal and non-fatal) disputes, where the correlation of democracy with peace is limited to mixed-economic dyads, those where one state has a contractualist economy and the other does not, a subset that includes only 27% of dyads from 1951 to 2001, including only 50% of democratic dyads. It is further shown that this marginal peace is a statistical artifact since it does not exist among neighbors where everyone has an equal opportunity to fight.

The results of this study should not be surprising, as they merely corroborate the present state of knowledge. This is because, while DOR ardently assert that four alleged errors, when corrected, each independently save the democratic peace proposition—multiple imputation, the exclusion of ongoing dispute years, an interaction term, and their alternative measure for contractualist economy—they never actually report any clear-cut evidence in support of their claims. One issue not addressed is Dafoe and Russett's (2013) challenge to Mousseau et al. (2013a) on the grounds that our reported insignificance of democracy is not significant. Like the four claims of error made by DOR addressed here, Dafoe and Russett (2013) made this charge without supporting it. Mousseau et al. (2013b) then investigated it and showed that it

too has no support. This issue appears resolved, as Russett and colleagues (DOR) did not raise it again. Nor have DOR or anyone else disputed the overturning of the democratic peace as reported in Mousseau (2012a), which has not been contested with any assertion, supported or unsupported.

The implications of this study are far from trivial: the observation of democratic peace is a statistical artifact, seemingly explained by economic conditions. If scientific knowledge progresses and the field of interstate conflict processes is to abide by the scientific rules of evidence, then we must stop describing democracy as a “known” cause or correlate of peace, and stop tossing in a variable for democracy, willy-nilly, in quantitative analyses of international conflict; the variable to replace it is contractualist economy. If nations want to advance peace abroad, the promotion of democracy will not achieve it: the policy to replace it is the promotion of economic opportunity.

The economic norms account for how contractualist economy can cause both democracy and peace has been explicated in numerous prior studies and need not be repeated here (Mousseau, 2000, 2009, 2012a, 2013). An abundance of prior studies have also corroborated various novel predictions of the theory in wider domains (Ungerer, 2012), and no one has disputed the multiple reports that contractualist economy is the strongest non-trivial predictor of peace both within (Mousseau, 2012b) and between nations (Mousseau, 2013; see also Nieman, 2015). The only matter in controversy is whether democracy has *any* observable impact on peace between nations after consideration of contractualist economy. My investigation begins below with the allegation of measurement error.

Measuring contractualist economy

Some confuse the contractualist peace with the interdependence peace (e.g. Ray, 2013: 199). However, there is nothing about trade interdependence in economic norms theory, which predicts a *preference* for trade, as well as democracy, from contract norms, and a preference for trade is not the same thing as trade interdependence. Peace happens because markets are positive-sum-like, so nations that prefer to trade, most reliably nations with contract-intensive economies, have interests in each other’s welfare and security even if they have little or no direct trade interdependence between them (Mousseau, 2009, 2012a, 2013).¹

My early challenges to the democratic peace proxied contract norms with the interaction of democracy and development (Mousseau, 2000), which led some to confuse the test hypothesis (an interaction effect) with the theorized causation (a spurious effect) (e.g. DOR: 203). Only later did a direct, not a proxy, measure become available in the form of life insurance contracts (Mousseau, 2009). Life insurance contracts directly gauge the causal mechanism of micro-level dependency on the state for the enforcement of contracts because they cannot rely on personal forms of trust, since the delivery of service is expected only after the death of the policy holder (Mousseau and Mousseau, 2008). North et al. (2009: 159) concur with this reasoning, which Cashman (2013: 273) describes as “rather ingenious”.

Two studies overturned the democratic peace with contractualist nations identified as those with above-median (per capita) levels of life insurance contracting, with missing data assumed to indicate contract-poor (henceforth “clientelist”) economy (Mousseau, 2009, 2012a), since in theory clientelist governments are not reliable generators of data (Mousseau, 2009: 66). Three studies overturned the democratic peace with contractualist nations measured in continuous form as the natural log of life insurance contracting per capita, with

missing values imputed (Mousseau et al., 2013a, b; Mousseau, 2013). DOR are critical of the continuous measure, where 65% of data points were singly imputed, which translates (by my count) to 89% at the dyadic level (Mousseau, 2013). They recommend using multiple imputation (DOR: 206).

DOR do not show that multiple imputation restores the democratic peace correlation: they report only one clear-cut test using multiple imputation, and democracy is not significant in this test.² Nor does their critique apply to the two studies that overturned the democratic peace using the binary measure for contractualist economy (Mousseau, 2009, 2012a). Therefore the missing data issue raised by DOR yields no compelling reason to doubt that the contractualist peace overturns the democratic one.

I seek to further resolve the measurement issue in five ways. First, I obtained updated life insurance data from Beck et al. (2010), which contain fewer missing data points than the prior data. I call the measure, logged, *Contract-Intensive Economy* (CIE). Second, I report results using an entirely new measure for contractualist economy. Like insurance contracts, investment contracts are reliably dependent on third-party (state) enforcement, since they have strong inter-temporal dimensions. I proxy private *Investment* with the product of *KI* (proportion of GDP in investment) and per capita *RGDPL* in the Penn World Tables data (Heston et al., 2012).

Third, I adopt a more theoretically derived and rigorous binary measure for *Contractualist Economy* than that used in prior studies. Nations in transition to contractualist economy should be experiencing unusually high life insurance growth rates, as increasing numbers of people are selecting to place their economic securities in contract. This expectation is corroborated in the data: growth rates start going up at US\$25 per capita and do not return to a steady state until US\$165. Theory and data thus suggest values greater than US\$165 indicate contractualist economy, and those below US\$25 indicate clientelist economy. However, as added precautions I classify a nation as contractualist only if it also does not have a substantial *Informal* sector (identified as having a higher energy consumption level than that predicted by formal GDP data), and allow missing data to indicate clientelist economy only if Investment is below the median (and year is after 1959).³

Fourth, to reduce missing values I draw on migration data. By definition a nation with a contractualist economy must have a robust labor market (Mousseau, 2009: 60), and the quest for economic opportunity is the most basic motive for migration (Hatton and Williamson, 1992: 3). It follows that consistent zero net-emigration, when unrelated with war events, indicates the time we can extrapolate backwards that a contractualist nation had been contractualist, and consistent zero net-immigration indicates the time we can extrapolate backwards that a clientelist nation had been clientelist. Finally, I estimate missing values in CIE drawing on the theoretically-informed factors Investment, Informal and the binary measure Contractualist Economy.⁴

While all analyses below start in 1950, the first year of available data on Investment, for illustrative purposes in Table 1 I draw on migration data backwards to show that contractualist economy is largely a twentieth-century phenomenon: only the US was likely contractualist and sovereign before World War I, as positive net-emigration in all other nations that later enter the data as contractualist informs us that they probably had weak labor markets before this war. Ray (2013: 199) speculates that the World Wars were fought between contractualist nations, but we can see that all the contractualist nations remained neutral or fought on the same side in World War II.

Table 1. Nations with contract-intensive economies, 1776–2007

Nation	Year of transition or sovereignty ^a	Nation	Year of transition or sovereignty	Nation	Year of transition or sovereignty
USA	1776	France	1975	Malaysia	1997
Australia	1920	Austria	1977	Malta	1997
Canada	1920	Ireland	1979	Czech Republic	1998
New Zealand	1920	Luxembourg	<1979	Mauritius	1998
Netherlands	1922	Israel	1981	Slovenia	1998
Switzerland	1926	Taiwan	1983	United Arab Emirates	2000
Sweden	1930	Spain	1987	Hungary	2001
UK	1931	Cyprus	1989	Slovakia	2002
Norway	1960	Italy	1989	Botswana	2003
Denmark	1962	Korea, Republic	1990	Poland	2003
Germany	1962	Portugal	1990	Singapore	2003
Japan	1963	Barbados	1992	Trinidad and Tobago	2005
Finland	1967	Chile	1996		
Belgium	1972	Greece	1997		

^a<' indicates data missing in prior years.

Table 2. Contractualist peace vs democratic peace, fatal disputes 1951–2001^a

	Model 1	Model 2	Model 3	Model 4 ^e
Democracy _L ^b	0.95	1.02	1.00	1.01
	–2.23**	0.79	0.17	0.51
CIEL _L ^c	–	0.41	–	–0.42
	–	–8.66***	–	–8.49***
Investment _L ^d	–	–	0.37	–
	–	–	–4.14***	–
Intercept	0.06	0.43	0.11	0.68
N	435,260	349,635	348,720	435,260

^aOdds ratios with z-scores in each cell. Standard errors (not reported) corrected for clustering by dyad. Base model identical to DOR (Figure 1) and Mousseau (2013, Table 1, Model 2). Independent variables lagged one year behind the dependent variables. Full statistical outputs can be viewed online at <http://politicalscience.cos.ucf.edu/people/mousseau-michael/>.

^bGauged in standard form as the democracy score of the less democratic state in the dyad using the *Polity2* variable in the *Polity IV* dataset, version 2013 (Marshall et al., 2012).

^cThe Contract-Intensive Economy score of the less contract-intensive state in the dyad.

^dThe Investment score of the less contract-intensive state in the dyad.

^eMissing values for CIEL_L estimated from 20 imputations.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

The analyses in Table 2 draw on the exact base model used by DOR and Mousseau (2013). We can see in Model 1 that without consideration of contractualist economy, democracy appears as a force for peace: odds ratio coefficients <1 indicate negative effects, so the coefficient for Democracy_L (0.95) indicates that a one-standard deviation increase in democracy reduces the odds of a fatal onset by $1 - 0.95 = 5\%$.

Model 2 advances knowledge by adding the new measure for Contract-intensive Economy_L. As can be seen, Democracy_L (1.02) is now in the positive direction and CIE_L (0.41) is highly significant with a z -score > 8 . The coefficient indicates that a one-standard deviation increase in CIE_L reduces the odds of a fatal onset by $1 - 0.41 = 59\%$. In standard procedure for interpreting multivariate regressions, the difference between Models 1 and 2 informs us that the contractualist peace supersedes the democratic one (Blalock, 1979: 473–474). The difference between the coefficients of Models 1 and 2 informs us that the contractualist peace is more than 10 times stronger than what we had previously thought was the power of the democratic peace ($59/5\% = 11$). Model 3 reports identical results using the proxy measure Investment, and Model 4 reports the same results with missing data for CIE multiply imputed as recommended by DOR.

Table 2 yields compelling evidence that the contractualist peace supersedes the democratic one, since two different measures for contractualist economy, including three distinct tests, yield identical results. Whereas DOR fail to support their claim that multiple imputation restores the correlation of democracy with peace, Table 2 establishes that it does not. Missing values for contractualist economy can no longer be an issue in this controversy.

Measuring the onset of militarized conflict

DOR stipulate that in constructing the data, years of ongoing militarized disputes should be excluded from the analyses, and call my (Mousseau, 2013) inclusion of these years a “major error” (204a, see also 201, 203, 204bc, 207ab, 208, 210). This critique applies to only one study that overturned the democratic peace: years of ongoing disputes or crises were excluded in all the other studies that have overturned it (Mousseau, 2009, 2012a; Mousseau et al., 2013a, b). Therefore this critique does not pose a detrimental challenge to the evidence against the democratic peace correlation.

Nor was my inclusion of ongoing dispute years (Mousseau, 2013) an error. DOR’s only support for their claim is that they are not aware of anyone who has “advocated [my] approach” (204). I think there is a good reason to follow my approach: since in the militarized interstate dispute data new disputes can happen even as prior ones are ongoing, the exclusion of ongoing years as DOR want must result in a loss of information. More critically, this loss of information must result in biased estimation, since the excluded ongoing years are not missing at random given that they must correlate with the retained years of dispute onsets in non-ongoing years, resulting in an undercount of events occurring in highly conflictual dyads. I recommend that future studies continue the practice of including ongoing dispute years, which I did in Table 2 above.

DOR report that their exclusion of ongoing dispute years “restores the evidence for the democratic peace” (204). I cannot find where they obtain this result: of their 120 regressions (below), only one is a clear-cut test of democratic peace with ongoing years excluded; they report no equivalent second test with ongoing years included with which to compare. DOR claim that my exclusion of ongoing years biases the data against democratic peace because democratic conflicts are “shorter” (204), but they offer no evidence for this claim.

Table 3 shows that the treatment of ongoing dispute years has no relevance in this controversy. The analyses repeat Table 2 only with ongoing dispute-onset years treated as missing as DOR want, and we can see that it does not restore the democratic peace as claimed (204), although the results are weaker owing to the undercount of events occurring in highly

Table 3. Contractualist peace vs democratic peace, fatal disputes 1951–2001, years of ongoing disputes dropped^a

	Model 1	Model 2	Model 3	Model 4
Democracy _L	0.94 –2.28 **	1.01 0.25	1.00 –0.09	1.00 –0.03
CIE _L	–	0.47 –6.85 ***	–	0.47 –7.25 ***
Investment _L	–	–	0.43 –3.24 ***	–
Intercept	0.02	0.11	0.03	0.23
N	434,832	349,368	348,453	434,832

^aSee notes a–e in Table 2.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

conflictual dyads. We now have even more-compelling evidence that the contractualist peace supersedes the democratic one, with two different measures for contractualist economy, two treatments of missing data, and two dealings of ongoing years, for a total of six tests, all reporting zero impact of democracy on peace.

Is there an interaction of democracy and contractualist economy?

“The entire evidential basis” for my claim against the democratic peace in Mousseau (2009), assert DOR (205), “is based on a misreading of the interaction term” of “Life Insurance per Capita and Democracy”. In fact, there is no interaction of “Life Insurance per Capita and Democracy” in Mousseau (2009), by any measure of these concepts, and therefore no such misinterpretation could have occurred. Nor is there any interaction term of any kind in the four other studies that overturned the democratic peace (Mousseau, 2012a, 2013; Mousseau et al., 2013a, b). Therefore the assertion of a “misreading of the interaction term” yields no compelling reason to doubt that the contractualist peace supersedes the democratic one.⁵

The only studies that have tested for an interaction of CIE and democracy, as discussed by DOR, are Dafoe and Russett (2013) and DOR (206). They interpret the significance of their interaction term as indicating that the democratic peace is not spurious but rather evidence for a causal interaction of democracy and CIE. However, this is not the correct inference to draw from an interaction term, because such a term does not reliably distinguish a spurious relationship from a conditional one: since by definition a confounding variable causes both the test variable and the dependent variable, in a spurious relationship the test variable (Democracy_L) would have no association with the dependent variable where the confounding variable (CIE_L) has low values, but would have an association with the dependent variable where the confounding variable (CIE_L) has high values. Therefore, when using an interaction term with a spurious relationship, the constituent test variable (Democracy_L) will sometimes appear significant above some value of the constituent confounding variable (CIE_L), even if there is no causal interaction.⁶

This problem is known as Simpson’s Paradox: aggregated data can mask underlying relationships in the data. The solution to Simpson’s Paradox is to disaggregate the data, so to test Dafoe and Russett’s (2013) and DOR’s causal claims of an interaction, I disaggregated

Table 4. Testing for a conditional impact of democracy, all disputes 1951–2001^a

Economic type	Odds ratios for democracy ^b	Z	N	Percentage of sample	Percentage of democratic dyads ^c
Clientelist dyads	1.01	0.67	193,772	69.6%	20%
Mixed-economic dyads	0.94	−3.48***	76,823	27.6%	50%
Contractualist dyads	0.90	−1.29	7794	2.8%	30%

^aIndependent variables lagged one year behind the dependent variables. Standard errors (not reported) corrected for clustering by dyad. Base model identical to DOR (Figure 1) and Mousseau (2013, Table 1, Model 2).

^bThe democracy score of the less democratic state in the dyad.

^cIdentified in standard form with democracy score > 6 in the less democratic state in the dyad using the Polity2 variable from the Polity IV dataset, version 2013 (Marshall et al., 2012).

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

the data along three economic conditions: clientelist dyads (those where both states have clientelist economies), mixed-economic dyads (those where one state is contractualist and the other clientelist), and contractualist dyads (those where both states have contractualist economies).

As can be seen in Table 4, democracy is not a correlate of peace in clientelist dyads: the odds ratio (1.01) is > 1, indicating that, if anything, joint democracy *promotes* militarized conflict in clientelist dyads. It seems the weight of the correlation of democracy with peace in multiple prior studies has been carried by the mixed-economic dyads (0.94), which constitute a minority (27.6%) of all dyads and only half (50%) of all democratic dyads. Since there is no evidence of democracy causing peace in the clientelist dyads where there is no treatment of contractualist economy, there is no evidence of an interaction effect.⁷

Why might democracy significantly correlate with peace only in mixed-economic dyads? I have pointed out before that since constituents in contractualist nations value democracy, they expect their leaders to refrain from fighting nations they perceive as democratic. In this way a correlation of democracy with peace may appear in mixed-economic dyads, but one that is entirely accounted for by contractualist economy (Mousseau, 2009: 63–64). Certainly no theory of democracy as presently constituted can explain this pattern. Properly tested, there is no support for a causal interaction of democracy with contractualist economy, and in the 27% minority of dyads where democracy does significantly correlate with peace, the literature offers no reason to think that democracy has anything to do with it.

Maybe democracy causes contractualist economy and peace?

In the economic norms account for the democratic peace, contractualist economy causes both democracy and peace. Ray (2013) argues that the causation is reversed, with democracy causing contractualist economy and peace (see also Dafoe and Russett, 2013: 121). His primary evidence is a list of contractualist nations obtained from Mousseau (2012a: 200). Ray counts 13 cases in this list where democracy preceded contractualist economy, and describes them as “undermin[ing] Mousseau’s argument” (2013: 199).

There are two serious errors in Ray’s (2013) analyses. First, there is nothing in economic norms theory that precludes other causes of democracy, so there is nothing in the theory that precludes democracy from sometimes, or even all the time, predating contractualist

economy. Logically, Ray's 13 cases cannot undermine "Mousseau's argument".⁸ Second, Ray's evidence for reverse causality is based on an erroneous research design: his sample is a list of contractualist nations, so it excludes nearly all counter-cases to his argument, the roughly *one-half* of all democratic nation-years with clientelist economies from 1960 to 2000, as I had previously reported (Mousseau, 2009: 70, 2012a: 205).

Economic norms theory identifies how a rise in micro-level dependency on contracting with strangers legitimates democracy, which is the best-known way to render the state's commitment to enforce contracts credible. Since the theory does not preclude other causes of democracy it most reliably predicts not democratic transitions but democratic survival, since nations with contractualist economies are predicted to be democratic, and democratic clientelist regimes are predicted to be unstable given that their democracy is not legitimated from below.

The state of evidence is consistent with economic norms expectations. First, every democratic failure in history has occurred in a nation with a clientelist economy (Aytaç et al., 2016: 75; Mousseau, 2012a: 204–205). Second, there are only five contractualist nations in the Table 1 without democracy ($\text{Polity2} \leq 6$), and two of these democratized within a decade of becoming contractualist: South Korea became contractualist in 1990 and democratic in 1998; Taiwan became contractualist in 1983 and democratic in 1992. Malaysia is close, having moved to just under the threshold ($\text{Polity2} = 6$) for democracy within 12 years of becoming contractualist, and along with the United Arab Emirates (from 2000) and Singapore (from 2003) is predicted to fully democratize at any time.⁹

Third, there is extensive evidence for contractualist economy causing democracy and peace, but none for the reverse: we know that contractualist economy affects democracy even after consideration of any effect of democracy on contractualist economy (Aytaç et al., 2016), and we know that democracy has no impact on peace after consideration of contractualist economy (e.g. Tables 2 and 3 above). Since we are unaware of any evidence that challenges these multiple tests, there is no scientific rationale for interpreting the state of knowledge as democracy causing democracy and peace (Blalock, 1979: 473–474).

Finally, the theory that predicts contractualist economy to cause both democracy and peace among nations has been corroborated in multiple domains, including studies of civil conflict and insurgency (Mousseau, 2012b), terrorism (Boehmer and Daube, 2013; Krieger and Meierrieks, 2015; Meierrieks, 2012), the democratic resource curse (Aytaç et al., 2016) and human rights (Mousseau and Mousseau, 2008). I am unaware of any theory, let alone any corroboration of any theory, that identifies causation from democracy to contractualist economy; Ray (2013) offers none.¹⁰

Reports of democratic peace controlling for contractualist economy

DOR estimate 120 regressions controlling for contractualist economy, and report in their Figure 1 (208) that "the coefficient for Democracy is significant at the $p < .1$ level in 107 of them (89%) and is highly significant ($p < .01$) in 79 (66%) of them" (207).

DOR do not fully explain or report their regressions, but the field needs to know why these analyses tend to support a democratic peace, when all other analyses controlling for contractualist economy do not. So I obtained and analyzed their data, and in doing so identified six measurement and specification practices used by DOR that are controversial or contrary to convention. These practices appear in all but four of DOR's 120 regressions.

Table 5. Controversial measurement and specification practices in tests of democratic peace^a

Practice	Number of regressions effected (of 120)
1. Recoding of dispute ongoing years as dispute onset years	58
2. Incorrect dispute data analyzed	81
3. Inclusion of dispute joiners	50
4. Inclusion of an interaction term	50
5. Adoption of dubious measure for contract-intensive economy	28
6. Inclusion of controversial control variable	58
Total	424

^aFrom figure 1, Dafoe et al. (2013: 208).

Nevertheless, in these four regressions democracy is significant at the 0.10 level. Before turning to these four regressions, I address DOR's controversial practices, which I list in Table 5.

Recoding of dispute ongoing years as dispute onset years

In 58 of their 120 regressions DOR re-coded the data so that each ongoing dispute-year is considered an independent dispute-onset event, regardless of whether the year contained a dispute-onset or not. DOR do not explain this decision to alter the data, which is contrary to conventional practice and renders erroneous results since the events analyzed are neither accurate nor independent (Bremer, 1992: 311, 1993).

Incorrect dispute data analyzed

In 81 of their 120 regressions DOR appear to have used the Correlates of War (COW) dispute data, rather than the standard Maoz Dyadic COW dispute data. This is a mistake, because Maoz (2005) has shown that in the conversion of the COW dispute data to the dyadic level errors can ensue with nations identified as in dispute even if they never confronted one another directly.

Inclusion of dispute joiners

By convention "joiners" are participants who enter a conflict after it was already started by "originators". Standard practice is to observe only originators, because processes that compel dispute joining are thought to be different from those that compel dispute originating, and studies that fail to make the distinction are "fundamentally flawed" (Bremer, 1993: 320). DOR included joiners in 50 of their 120 regressions.

A total of 101 of DOR's 120 regressions committed at least one of the above missteps and must be rejected as invalid. The odds of democracy being significant at the 0.10 level are 13% higher in these invalid regressions (92%) compared with the others (79%). These missteps could be inflating the democracy coefficients because they increase the number of events, thus increasing the odds of finding significance in peaceful dyads. We will see below that geographically-distant clientelist dyads tend to be peaceful because they largely cannot

fight, and these dyads are more likely than other clientelist ones to be jointly-democratic, thus inflating democracy as a statistical artifact in these invalid regressions.

Adoption of dubious measure for contract-intensive economy

In 28 of their 120 regressions DOR adopt a new measure for contractualist economy, the percentage of life insurance premium volume to GDP. This measure lacks face validity, as it does not gauge the causal mechanism of economic norms theory because a low GDP nation can have high values of this measure and still a low level of micro-level dependency on the state for the enforcement of contracts.

DOR offer no theoretical justification for their measure, advancing only the technical one that CIE correlates with GDP at “0.86 in [the life insurance] data set” (207). However, I have reported this correlation at only 0.77 (2013: 194) and this is at the national level; at the dyadic level that matters this correlation is only 0.67 (Table 2 above) and 0.56 measured with energy consumption (Mousseau, 2013: 193), values well below the conventional 0.85 threshold for multi-collinearity. Nor do DOR report any evidence that multi-collinearity is a problem.

Income is noticeably absent from almost all quantitative studies of international conflict, why does it suddenly matter now? I am unaware of any theory for income causing peace, and it is nonsensical to attribute causation to a factor that lacks explanation. An atheoretical factor may inspire alternative reasons for a result, but DOR do not offer an alternative reason; nor do they offer any explanation for how income might cause contractualist economy, which can be the only other reason for considering it (Blalock, 1979: 468–474; Ray, 2003). In fact, the state of knowledge, predicted by economic norms theory, is that CIE Granger-causes income and income does not Granger-cause CIE (Mousseau, 2012b), so income is quite clearly endogenous in tests of contractualist economy and should not be controlled for (Blalock, 1979: 468–474).¹¹

Beyond the missing theoretical or technical justification for their alternative measure, and its questionable face validity, DOR never actually showed that their measure restores the correlation of democracy with peace: all of their 28 regressions that contain their alternate measure appear in one of the 101 regressions identified above as invalid.

Inclusion of an interaction term

In 50 of their 120 regressions DOR included an interaction of democracy and contractualist economy. As discussed above, a significant interaction term cannot reliably distinguish a spurious relationship from a conditional one, and therefore cannot serve as corroborative evidence of democratic causality in this controversy.

Inclusion of controversial control variable

DOR include the measure Democracy_H, which is the democracy score of the more democratic state in the dyad, in 58 of their 120 regressions. Choi showed that inclusion of Democracy_H causes the coefficient on Democracy_L to be “artificially inflated and thus biased” toward a finding of democratic peace (Choi, 2011: 783–784; see also Henderson, 2002: 32–33). Conventional practice also mandates excluding variables (Democracy_H) that are mathematically related to the test variable (Democracy_L), a view previously supported

by Russett and colleagues (Oneal and Russett, 2005: 295) and Ray (2003). Convention and logic also mandate that no hypothesis can be considered highly corroborated, such as the “law” of democratic peace, if it holds with only one particular measure of a control variable.

In summary, a total of 101 of DOR’s 120 regressions are invalid owing to errors in the dependent variable. Of their remaining 19 regressions, 10 are irrelevant because they include the inconsequential interaction term. Of the remaining nine regressions, five are inconclusive because they include the Democracy_H term that is said to artificially inflate the democracy coefficient.

This leaves four of DOR’s 120 regressions that matter. In these four DOR report the democracy coefficients as significant, all at the lowest 0.10 threshold, thus yielding some support for democracy as a cause of peace. These four estimates differ from my own above primarily in how they measure the dependent variable: all four are of all dispute-onsets, meaning non-fatal disputes are included in the dispute-onset measure.¹²

Analyses of all (fatal and non-fatal) disputes is consistent with conventional practice, so the results of these four estimates in DOR leave the field with a non-trivial puzzle of a possible democratic peace in analyses of all militarized disputes, but not one in analyses of fatal-only disputes, militarized interstate crises (Mousseau et al., 2013a), and wars (Mousseau, 2009).

The literature yields three reasons to suspect bias in analyses of all (fatal and non-fatal) disputes compared with fatal-only ones and crises, especially those of the political economy of conflict. First, some number of disputes enter the militarized interstate dispute data even as no leader on either side intended to confront the other. A common example is fishing disputes, where the coastal police force of one state detains a private vessel of another, with no leader of either side involved. Gleditsch and Hegre (1997: 288) offer that it is “questionable whether such conflicts have any place in a data set on international disputes”. Disputes with at least one fatality, on the other hand, are more likely to reflect confrontations intended by the leaders of both states in a dyad, which is what our theories are designed to model. It is possible that contractualist nations are over-represented in these “policing” types of disputes, since they are more likely than others to be willing and able to police their territories and coastlines (Mousseau, 2012b: 480).

The second reason why analyses of all-disputes may be biased in studies of the economics of conflict is because the conflict data are largely gleaned from media sources located in the contractualist nations, which are more likely to report disputes short of fatalities involving their own. Weidmann (2015) has shown how conflict data dependent on media sources tend to have these kinds of reporting inaccuracies, and the data corroborate this bias: the odds of a fatality once in dispute for clientelist dyads are about three times that of other dyads (28/9% = 3.3). The most common solution to under-reportage bias is to raise the level at which an event is deemed to have occurred, to fatal disputes: whereas a rifle fired across an international border in Africa may easily go unreported, a fatality resulting from such a rifle shot probably will not.

A third bias in the data involves geographic distance. I previously noted that clientelist nations can largely fight only their neighbors, given their weak states and thus weak facility for controlling their militaries, inefficiencies in their military bureaucracies based on patronage, and weak economies and thus weak capacities for sustaining advanced air and naval capabilities (Mousseau, 2005: 68–69). This is corroborated in the data: 87% of disputes in clientelist dyads have attached borders or are separated by less than 400 miles of open water, compared with only 36% for dyads with at least one contractualist nation ($p < 0.001$).

Table 6. Contractualist vs democratic peace, all disputes (fatal and non-fatal) 1951 to 2001, neighboring dyads^a

	Model 1	Model 2	Model 3	Model 4
Democracy _L	0.98	1.03	1.01	1.02
	-1.76*	2.46 ^t	1.17	1.45
CIE _L	-	0.70	-	0.72
	-	-4.35***	-	-5.36***
Investment _L	-	-	0.78	-
	-	-	-4.08***	-
Intercept	0.24	0.53	0.43	0.49
N	17,452	13,283	13,183	17,452

^aGeographically contiguous or separated by less than 400 miles of open water. Analysis of neighboring dyads necessitates two modifications from the base model: the variable Distance is dropped and control for geographic Contiguity equals 1 if the nations in the dyad share a common land border. For further information see notes a-e in Table 2.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$, ^t $p < 0.01$ wrong direction.

Whether this “distant-clientelist” peace is a result of weak states, data bias or both, for it to account for the weak-non-fatal “democratic” peace as reported in DOR’s four regressions, distant clientelist dyads would have to be more likely than non-distant ones to be democratic. This too is corroborated in the data: distant clientelist dyads are 27% more likely than non-distant ones to be democratic ($p < 0.001$). While contractualist democracies tend to cluster geographically, it seems clientelist ones do not, probably because they are unaffected by economic diffusion effects, which would affect contractualist democracies but not clientelist ones. As discussed above, the latter democratize for other reasons.

That a “distant-clientelist” peace can account for the (weak non-fatal) democratic one as reported by DOR is corroborated in Table 6, which repeats Table 2 only with analyses of all disputes on the observation of bordering-only dyads. We can see that democracy does not correlate with peace among neighbors where everyone has an equal chance to fight: the coefficients for Democracy_L, negative and significant in Model 1, flip to the positive direction in Models 2–4, even reaching significance in this wrong direction at the 0.01 level in Model 2.

It thus appears that the (weak) correlation of democracy with peace in analyses of all nations and all disputes as reported in four regressions by DOR is a statistical artifact. In analyses of all disputes contractualist nations are over-represented in the data, and the weak peace appears to be the consequence of a distant peace in clientelist dyads, which largely cannot fight and distant clientelist dyads are more likely than non-distant ones to be democratic.

Conclusion

No one has challenged the multiple reports that contractualist economy is the strongest non-trivial predictor of peace both within (Mousseau, 2012b) and between nations (Mousseau, 2013; see also Nieman, 2015). The only matter in controversy is whether democracy has any impact on peace after consideration of contractualist economy. I investigated all five reasons offered in the literature (excluding already-refuted arguments) to think democracy causes peace, and found no support for any of them. The correlation of democracy with peace is zero regardless of how contractualist economy or interstate conflict is measured; the

disaggregation of the data yields no support for a causal interaction of democracy with contractualist economy, and the state of knowledge offers no evidence of causation from democracy to contractualist economy and peace.

While some correlation of democracy with peace appears in analyses of all disputes (at the 0.10 level), this appears to be a statistical artifact, since democracy is near zero in analyses of wars, fatal-only disputes (Mousseau, 2009, 2012a, 2013 and above), and militarized crises (Mousseau et al., 2013a, b). Analyses of all-disputes are less accurate than those of fatal-disputes and crises because they are more likely to include events that are not state-to-state confrontations, and more likely to under-report events occurring in clientelist dyads. We saw that clientelist democracies tend to be geographically dispersed, and this may account for the non-fatal peace, which does not exist in bordering dyads where everyone has an equal chance to fight. The non-fatal correlation of democracy with peace is also marginal, as we saw in Table 4 that it includes only 27% of dyads and only 50% of joint-democratic dyads.

This study largely investigated unsupported assertions of fact and showed them to lack support: neither DOR nor Ray (2013) properly supported their claims that multiple imputation, the treatment of ongoing dispute years, an interaction, the adoption of an alternative measure for contractualist economy, or reverse causality actually restore the evidence for the democratic peace. In this way this study merely corroborated what was already the state of knowledge, and it would be a mistake to think there are continuing factual differences in this controversy. I cannot promise that the analyses herein are error free, and I fully expect defenders of the democratic peace to carefully scrutinize them for errors, but no claim of error should be perceived as resurrecting the correlation of democracy with peace unless it is also shown to change results.

Nor has anyone disputed the overturning of the democratic peace as reported in two studies (Mousseau, 2009, 2012a). While DOR (2013) assert that the analyses in Mousseau (2009) are based on a misinterpreted interaction term, there is no such interaction term in Mousseau (2009). The only evidence-based defense of the democratic peace that exists today comes from DOR's 120 regressions, 101 of which are invalid. Of the 19 valid ones, only 15 are of fatal disputes that count, and every one of these 15 regressions is mired by one of two questionable practices: five include control for the Democracy_H term that is said to artificially inflate the democracy coefficient; 10 are irrelevant because they include the inconsequential interaction term additionally calculated at the misleading 75th percentile of contractualist economy. If there is a correlation of democracy with peace, why cannot this be shown in a clear-cut regression?

Beyond the facts, scientific assessment calls for acknowledgment of the imbalance of theory in this controversy. Economic norms theory does not deny the correlation of democracy with peace, and thus all prior evidence for it; rather, it offers a specific and falsifiable explanation for the correlation that identifies it as spurious. Defenders of the democratic peace are not putting forth a competing explanation for the correlation; rather, they simply oppose the idea that democracy does not independently cause peace, with no reason given for this opposition. However, democracy is not a random variable, so there are no scientific grounds that prohibit us from seeking to explain it, and there are no scientific grounds that preclude that whatever explains democracy cannot also explain the peace.

Causality, not statistics, lies at the core of this controversy, and causality cannot be directly seen: it can only be theorized and corroborated. Yet defenders of the democratic peace have not addressed any of the extensive corroborations of economic norms theory accrued in studies of civil conflict and insurgency (Mousseau, 2012b), terrorism (Meierrieks,

2012; Boehmer and Daube, 2013; Krieger and Meierrieks, 2015), democratization (Aytaç et al., 2016), and human rights (Mousseau and Mousseau, 2008). The weight of evidence for economic norms theory overwhelms any theory of democracy causing peace (Ungerer, 2012), yet defenders of the proposition have sought only to report some statistically significant correlation of democracy with peace, as if correlation equals causation (Dafoe, 2011; Dafoe and Russett, 2013; DOR; Ray, 2013; Russett, 2010).

Nor is there any scientific basis for concluding that this controversy is ultimately unresolvable because the factors are closely related, as is frequently asserted without support (e.g. DOR: 203). The relevant factors are not closely related: contractualist economy is only moderately correlated with trade interdependence (0.31), income (0.71/0.56), and democracy (0.47) (Mousseau, 2013: 191–193). That contractualist nations are almost always democratic does not mean that democratic nations are almost always contractualist, and the *majority* 57% of democracies had clientelist economies from 1950 to 2010. The notion that democracy, market development, and trade are synonymous is rooted in ignorance, and ignorance cannot justify discarding, after the fact, our carefully constructed measures and datasets.¹³

The implications of this study are far from trivial: the democratic peace, defined as democracy causing peace, lacks the evidentiary core on which it is based; the observation of democratic peace is best explained by contract norms. If our field is to abide by scientific rules of evidence, then our scholars must stop describing democracy as a “known” cause, or correlate, of peace, and we must stop tossing in a variable for democracy, willy-nilly, in quantitative analyses of international conflict. The variable to replace it is contractualist economy, which not only subsumes democracy but is now the most powerful non-trivial factor in the study of international conflict, whose impact is more than 10 times that which we once thought democracy had.

No historical study is immune to criticism, but the progress of knowledge will not be furthered with another (third) round of ardently asserted claims of error that are not shown to change results. I understand the prior view of democratic peace is known and intuitive and the contractualist peace is less so, and unsupported assertions are enough for many to believe in already-known claims. However, the purpose of science is to promote rather than stifle innovation, and to differentiate good ideas from bad ones. Better yet are new ideas that can help make the world a better place, and economic norms theory is clear on that: if the wealthy market-oriented nations wish to advance democracy and peace around the world, the way to do that is to promote economic opportunity.

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Notes

1. The correlation of trade interdependence and contract-intensive economy is a weak 0.31 (Mousseau, 2013: 193). Prior studies have reported trade interdependence as drastically weakened

- or insignificant once contractualist economy is considered (Mousseau, 2013: 193; Mousseau et al., 2013a: 107).
2. This test can be seen with the coefficient marked “FM” in DOR’s figure 1. All their remaining models using multiple imputation are modified in various other ways, described below.
 3. The life insurance data are available from 1960 to 2010. DOR criticize Mousseau (2013) for deleting from the life insurance data “the years from 1950 to 1960” (DOR: 206). This deletion could not have happened since the years from 1950 to 1960 never existed.
 4. Using moving averages to capture national trends, a binary indicator for transition years, and a set of dummies to capture regional economic traditions. All steps in the measure can be viewed and replicated at <http://politicalscience.cos.ucf.edu/people/mousseau-michael/>.
 5. In Mousseau (2009) I tested for an interaction of democracy and *mixed*-CIE, not democracy and *joint*-CIE (CIE_L), as claimed by DOR. DOR treat these terms as having the same meaning, but since a dyad cannot simultaneously be both *mixed* (have only one state with a contractualist economy) and *joint* (have both states with contractualist economies), these are axiomatically and conceptually wholly different lower-order variables. This interaction term was also peripheral to my test reporting democratic insignificance controlling for joint CIE, since it was used only to control for the monadic case of dyads where one state is contractualist and the other clientelist (and this test is superseded with Table 4). DOR never suggest that this actual interaction term was misread. Russett and colleagues repeatedly bring up this interaction term and my quite different prior one of income and democracy (Mousseau, 2000) discussed above (Dafoe and Russett, 2013: 116; DOR: 205), but this is a distraction, since these studies are all superseded by the more recent ones that measure CIE directly without any interaction term (Mousseau, 2013; Mousseau et al., 2013a, b).
 6. This problem is aggravated in the DOR study by their decision to calculate the significance of their test variable (Democracy_L) at the unusually high 75th percentile of the confounding variable (CIE_L) (207, fn 7). Since we already know that contractualist nations are almost always democratic (Mousseau, 2012a: 202) and no one has disputed the reports that these nations are in a robust and perfect peace (Mousseau, 2009, 2013), it follows that democracy in dyads above the 75th percentile of CIE_L will be associated with peace even if democracy has no causal relationship with the peace.
 7. The analyses in Table 4 switch to all disputes (fatal and non-fatal), because analyses of fatal-only disputes result in perfect prediction (perfect peace) in contractualist dyads. The baseline probability of a dispute onset is almost identical in clientelist and mixed-economic dyads, so the positive coefficient for democracy in clientelist dyads cannot be attributed to a low baseline probability for conflict in these dyads.
 8. Ray (2013: 199) asserts without a citation that I have argued “that contract intensity typically precedes and produces democracy”. I have never argued this.
 9. This prediction must be qualified for the United Arab Emirates, which is unusual in that non-citizens constitute 83% of the population. It is questionable whether non-citizen majority populations can effectively press their states to credibly enforce contracts, and it is unknown the extent to which these non-citizens’ life insurance contracts are with foreign entities and therefore not dependent for enforcement by the UAE state. Further research is needed for unusual cases.
 10. Ray suggests that North et al. (2009) offer such a theory, and that it is “canonical” for economic norms theory (Ray, 2013: 199), but none of this is possible: economic norms theory (Mousseau, 2000) predates North et al. (2009) by nine years, and unlike economic norms theory, North et al. offer no (falsifiable) theory of social and economic change (2009: 262). A direct test of the relationship of contractualist economy and democracy is the next stage of the economic norms research program.
 11. Nevertheless, prior studies have controlled for income and report both democracy and income insignificant and CIE significant (Mousseau, 2009, 2013; Mousseau et al., 2013a).

12. Among themselves the four DOR models differ primarily in their source data (Mousseau's, 2013 or DOR's) and in their three functional forms for democracy (continuous, binary + 7, and binary + 10). I successfully replicated DOR's results using my own data and their older measure for CIE. With the revised measure for CIE introduced here Democracy_L is not significant ($p = 0.401$), but the binary measures (+ 7 and + 10) reach the 0.10 level of significance. DOR claim that my data (Mousseau, 2013) do not fit Polity IV (DOR, 2013: 207), but I (Mousseau, 2013) used Polity IV version 2013, while in all their 81 regressions using the wrong dispute data DOR seem to have used some earlier version of Polity IV.
13. Nor do the other economic factors in the literature, financial openness (Gartzke et al., 2001) and public property (McDonald, 2009) correlate with contractualist economy, and these too have no correlation with peace after consideration of contractualist economy (Mousseau, 2013: 193).

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