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Review by **Richard Cincotta**, The Stimson Center and The Woodrow Wilson Center

In "The Demographic Transition Theory of War," Deborah Jordan Brooks, Stephen Brooks, Brian Greenhill, and Mark Haas set out to show that the likelihood of experiencing the onset of interstate conflict shifts dramatically downward as states pass through a demographic transition. Demonstrating this trend statistically is no easy task. Interstate conflicts are rare events, which typically involve a confusing multi-state mix of actors. Yet, Brooks and her colleagues, who make some innovative methodological choices, succeed in convincingly demonstrating that this expected downward trend can be observed in at least four standard demographic measures—median age, the youth-bulge ratio, total fertility rate, and life expectancy at birth. Perhaps most interesting, for their set of interstate conflict data (1960 to 2001) the authors find that the peak probability of onset for interstate conflict is not at the earliest extremes of these variables.

With this landmark contribution, the authors fill a gap in the theoretical landscape of age-structural political demography—a field that has received more continuous attention from the U.S. intelligence community[1] than from academic political science. Readers in the foreign affairs, defense, and intelligence communities (to whom I highly recommend the publication) will profit both from the easy-to-interpret graphics and the well-developed set of causal narratives.

However, several caveats are worth relating. The first, about forecasting, is that it's too difficult. Interstate conflicts are rare events. Even at their peak (*see* Median-age Model, Fig. 4, 76), near a median age of 20 years, a state's probability of an interstate conflict tops out at around 4 conflicts per 1,000 annual observations—a significant finding, but one that is most appropriately considered in terms of relative risks (comparing the peak to the probability at a more advanced position in the transition). A second caveat pertains to Figure 5,

[1] See National Intelligence Council (NIC), *Global Trends 2025: A Transformed World.* (Washington, D.C.: Office of the Director of National Intelligence 2008); NIC, *Global Trends 2030: Alternative Worlds* (2012); NIC, *Global Trends: Paradox of Progress* (2017).

labeled the "Youth-Bulge Model," (78). Much of the following review will focus on that figure's differences from the Median-age Model, and Figure 5's erroneous caption (in the paper's print version, but hopefully corrected in the online version).

Background

Herbert Möller's assertions, in the late 1960s, of the role of the youth bulge in the rise of nationalism in mid-nineteenth century Europe and its exploitation by the Prussian state is generally regarded as the first serious exploration of a link between demographic transition and interstate conflict.[2] However, later investigators did not pursue his lead. Instead, the next two generations of researchers focused on Möller's arguments as they pertained to the era's plethora of revolutions. Revolts were a more attractive field of study. They were whipped up by idealistic young revolutionaries and their youthful, ideologically charged followers.[3] Moreover, intra-state conflicts (wars within states) have occurred at a relatively high frequency, facilitating statistical testing of demographic hypotheses.[4]

The most recent research suggests that youthful states are at a greater risk of revolutions (non-ethnic, non-territorial intra-state conflicts) than states that are age-structurally more mature, and that the risks to states with recent histories of these conflicts decline as they mature. However, the relationship between country-level age structure and ethnic conflict (ethnic, territorial) appears to be non-existent or very weak.[5] However, others assert that youthful minority age structures and differential growth remain significant sources of political instability.[6]

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[2] Herbert Möller, "Youth as a Force in the Modern World," *Comparative Studies in Society and History* 10:3 (Winter 1968/1969): 237-260.

[3] Jack A. Goldstone, *Revolution and Rebellion in the Early Modern World* (Berkeley: University of California Press, 1991).

[4] Christian G. Mesquida, and Neil I. Wiener, "Male Age Composition and the Severity of Conflicts," *Politics in the Life Sciences* 18:2 (September 1999):181-189; Henrik Urdal, "A Clash of Generations? Youth Bulges and Political Violence," *International Studies Quarterly* 50 (September 2006):607-629; Håvard Hegre, Joachim Karlsen, Håvard M. Nygård, Håvard Strand, and Urdal, "Predicting Armed Conflict, 2010-2050," *International Studies Quarterly* 57:2 (June 2013): 250-270.

[5] Omer Yair, and Dan Miodownik, "Youth Bulge and Civil War: Why a Country's Share of Young Adults Explains Only Non-ethnic Wars " *Conflict Management and Peace Science* 33:1 (2016): 25-44; Richard Cincotta and Hannes Weber, "Youthful Age Structures and the Risks of Revolutionary and Separatist Conflicts," in Achim Goerres, and Pietr Vanhuysse, eds., *Global Political Demography*, forthcoming, 2020; for a preview, see Cincotta, "Separatist Conflicts Persist, While Revolutionary Conflicts Just 'Age Away,'" *New Security Beat* (Washington, D.C.: Woodrow Wilson International Center for Scholars), https://www.newsecuritybeat.org/2018/09/separatist-conflicts-persist-revolutions-age-away/.

[6] Christian Leuprecht, "The Demographic Security Dilemma," *Yale Journal of International Affairs* 5:2 (Spring/Summer 2010); Rachel Blomquist, "Ethno-Demographic Dynamics of the Rohingya-Buddhist Conflict," *Georgetown Journal of Asian Affairs* 3:1 (November 2016): 94-117.

Despite these advances, and research that has uncovered links between age structure, treaty abrogation,[7] democratization,[8] and socioeconomic development,[9] interstate conflict's relationship with the demographic transition has remained virtually unexplored—until now.

Getting Around Data Problems

To skirt some of the formidable analytic obstacles that have deterred others, Brooks and her colleagues make some creative methodological choices. The authors gather their observed interstate conflicts by exercising a liberal definition that includes use of force as well as war (i.e., scores of 4 or 5 in the Dyadic Militarized Interstate Disputes Dataset)[10] (UCDP/PRIO Armed Conflict Data Set lists only a few more than 40 onsets from 1960 to 2001). They narrow each dyad to the state that is least advanced in the transition (the "weak link assumption", online appendix, 2). Finally, they use a polynomial-fitting protocol that they apply to logistic regression, and then generate a cloud of a thousand two-dimensional probability curves, which are referred to as "spaghetti plots" (77).

Details of these methods and their statistical results can be read in the first of two online appendices (https://doi.org/10.7910/DVN/EIASGF). This section describes the control variables and statistical results of their logistic regressions. To this list, I would have added *states under 5.0 million population*. Empirically, most small states have behaved in a more advanced fashion than would be expected by their positions in the demographic transition.[11] In addition to their statistical treatment of the transitions, I would have liked to see a histogram showing the demographic distributions of the dyadic partners—the collection of states that were more advanced in the demographic transition than those chosen to represent the observed interstate conflict.

Figs. 4 and 5: A Puzzle

In three of the four models (median age, total fertility rate, and life expectancy at birth) the peak probability of interstate conflict is not located at the variable's highest value (the extreme left-hand side). In the youth-

[7] Tongfi Kim, and Jennifer Dabbs Sciubba, "The Effect of Age Structure on the Abrogation of Military Alliances," *International Interactions* 41:2 (April 2015): 279-308.

[8] Cincotta, "Half a Chance: Youth Bulges and Transitions to Liberal Democracy," *Environmental Change and Security Program Report* 13 (Winter 2008/2009):10-18; reviewed in Cincotta, "Demography as Early Warning: Gauging Future Political Transitions in the Age-structural Time Domain," *Journal of Intelligence Analysis* 22:2 (April 2015):129-148.

[9] Reviewed in Ronald Lee, and Andrew Mason. *Population Aging and the Generational Economy: A Global Perspective* (Oxford: Edward Elgar, 2011).

[10] Zeev Maoz, Dyadic MID (version 2.0), *dataset*, (University of California, Davis, 2005), http://vanity.dss.ucdavis.edu/~maoz/dyadmid.html.

[11] Cincotta, "The Age-structural Theory of State Behavior," in William Thompson, ed., *Oxford Research Encyclopedia of Politics* (Oxford: Oxford University Press, 2017), DOI: https://doi.org/10.1093/acrefore/9780190228637 .013.327.

bulge model, it is. That is odd—median age (Fig. 4, 76) and the youth-bulge ratio (Fig. 5, 78) are known to be highly correlated.

To investigate this anomaly, I sorted states by both median age and the youth bulge ratio, replicated the functional form, and performed Monte Carlo simulations (as the authors did). As the authors note (see the histograms below the graphic models), the early extremes of those variables are represented by only a handful of cases. Thus, in the youthful region of these graphs (the left-hand side), the *law of small numbers* is in effect—standard errors are large, and it matters a great deal *which countries* fall into the earliest extremes. The resulting polynomial fit, combined with the sparseness of data on the left-hand side of the graphs, makes that tail of the function, when repetitively generated, swing wildly (*see* Fig. 5).

The Youth-bulge Ratio

This is a good time to call attention to an unfortunate typo in the caption of Figure 5 (entitled "Youth-Bulge Model," 78; *note:* the authors are trying to have it corrected in the online version). The caption defines the indicator on the horizontal axis as: "individuals 15-24 as a proportion of the total population." In fact, that measure was not used. The caption should read *individuals 15-24 as a proportion of the adult population, 15 and older* (75, and 2 in the online appendix).

But, Brooks and her colleagues haven't applied this measure of "individuals 15-24 as a proportion of the total population"—and that is a good thing. Its use is a common mistake, and a bad one with a history. "Individuals 15-24 as proportion of the total population" is *not* a function of the demographic transition. It conflates two sets of very different age structures: a set in the early part of the age-structural transition (with pyramidal age structures, showing high proportions of children and adolescents which diminishes the proportion of young adults) with another set observed after childhood mortality and fertility have declined and age-structure has matured (creating non-pyramidal age structures).

Unfortunately, this erroneous variable appears in the influential analyses of both James Fearon and David Laitin[12] and Paul Collier and Anke Hoeffler.[13] As one would expect, both sets of authors dismiss age structure's effects as insignificant. The fallout: two crippling setbacks for political demography, along with the glaring exposure of a demographic knowledge gap that continues to pervade the disciplines of political science and economics.[14]

Causal Narratives

[12] James D. Fearon and David D. Laitin, "Ethnicity, Insurgency, and Civil War," *American Political Science Review* 97:1 (March 2003): 75-90.

[13] Paul Collier and Anke Hoeffler, "Greed and Grievance in Civil War," *Oxford Economic Papers* 56 (October 2004): 563-595.

[14] For a discussion, see Urdal, "Youth Bulges and Violence," in Jack A. Goldstone, Eric Kaufmann, and Monica Duffy Toft, eds., *Political Demography: How Population Changes Are Reshaping Security and National Politics* (Oxford: Oxford University Press, 2012), 124-125.

I admit to *not* sharing political scientists' disciplinary enthusiasm for causal narratives. That said, Brooks and her colleagues have done an exemplary job of connecting numerous existing theories, historical anecdotes, and survey outcomes to justify their theoretical expectations. What they lay out for the reader is a panoply of shifting and emerging effects, some contributing to heightened risk of interstate conflict among early-transition states, and others explaining the decline in cross-border belligerence later in the demographic transition. However, like most causal narratives, it is not apparent which ones, if any, explain the differences; or how much each cause contributes to the effect—or how one would ever know. While this may be dissatisfying to some, it seems to be the reality of political systems.

To the paper's narratives, I would add a statistical fact. Since the early 1970s, liberal democracies—indicated by an assessment of Free in Freedom House's annual survey of political rights and civil liberties[15]—has most often been achieved and stabilized around a median age of 29 years. Examples abound, including: Greece at a median age of 32 years (in 1974), Portugal and Spain at 30 years (1976, 1977), South Korea at 26 (1988), Chile at 26 (1990), Taiwan at 30 (1996), Brazil at 29 (2002), and most recently, Tunisia at 31 (2014). In fact, this relationship was used to predict Tunisia's rise to Free more than two years before the Arab Spring.[16]

Thus, the authors' empirical observation that the frequency of interstate conflict drops after a median age of 30 years appears wholly consistent with *democratic peace theory*—a thesis that could turn out to be somewhat less about democracy and, quite possibly, more about demography.

Implications for Major Powers

Brooks et al. spend a substantial portion of their analysis applying their conclusions to the aging major powers. In this discussion, they include the U.S., where the workforce is projected to age and ultimately decline at a substantially slower rate than in China, Russia, Japan, or central, southern, and eastern Europe. They assume that the risk of interstate conflict will continue downward as the populations of these states age. Nonetheless, they are cautious—and wisely so. Russia's re-emergence colors this discussion.

The authors offer three ways to consider Russia's re-emergence. The first is statistical—i.e., a low probability does not mean it cannot happen. Second, the authors remind us that unusually high levels of middle-age mortality among males has slowed the pace of Russia's workforce aging and depressed its pension liabilities. This is a good point: Prior analyses have failed to explain how the loss of close-to-retirement males, well beyond their most productive years and in poor health, should undermine Russia's productivity, particularly when they can be replaced by younger workers who were never numbed by the Soviet system.

Then there is the third possibility: the dying Bear syndrome—a hypothesis of dubious merit. Near the turn of the twentieth century, some Western analysts were downplaying Russian Prime Minister Vladimir Putin's populist promises of restoring Russia's great power status by referencing the many facets of Russia's demographic decline—its decreasing population, its aging, its bottomed-out fertility rate, the degenerating

[15] See Freedom House (FH), *Freedom in the World, 2019: Democracy in Retreat* (Washington, D.C.: FH, 2019).

[16] Cincotta, "Half a Chance," 2008/09; *reviewed in* Cincotta, "The Age-structural Theory of State Behavior," 2017.

health status of its populace, and chronically low life expectancy among Russian males.[17] When Russia began to flex its muscles a decade later, some of those same critics took to portraying Russia as "the dying Bear," lashing out at U.S. dominance and NATO encroachment as its power waned.[18] Fast-forward nearly another decade, to the present. Now Russia is actively engaged in carving out a prominent role for itself in the Middle East, and once again, propping up weak dictators in Latin America. Admittedly, the Bear seems a lighter version of its Soviet predecessor. On the other hand, it is a quite a bit quicker on its feet.

I'd add another possibility: state capacity. As the burdens of population aging grow, age-structurally mature powers can be expected to use their stocks of human capital, technology, institutions, and infrastructure to attempt to maintain their regional status (as Japan has), or even opportunistically extend their power (like Russia). After all, those who dealt with the Soviet military during the Cold War will recall that, even then, in many sectors (e.g., communications, naval surface warfare, the space race) the Bear had learned how to do a lot with less. As China rises and rapidly ages over the coming decade, U.S. policymakers should keep these points in mind.

Conclusions

Brooks, Brooks, Greenhill, and Haas close with four key messages. They conclude that, while shifts into the latter portions of the age-structural transition (what the National Intelligence Council's *Global Trends* analyses have called the *mature* and *post-mature phases*)[19] will incur greater fiscal challenges, population aging may ultimately bring enhanced global stability. However, they also warn that this road to demographic peace is likely to be "bumpy"—there are no reasons to expect a smooth transition. Finally, they argue that, while the demographic future may constrain our aging adversaries and ultimately calm more youthful states, those eventualities are a long way off. Now is *not* the time for the U.S. to disengage.

I've saved the authors first take-away message for last. Brooks and her colleagues conclude that their findings indicate that scholars now need to account for demographic change in their analyses, add median age (a measure of age-structural maturity) to the list of control variables in empirical research, and re-examine core theories that have excluded age structure. After median age is added, re-analyzed hypotheses could yield quite different results.

Of course, I whole-heartedly agree. I fear, however, that the authors may someday find that—despite the graphic clarity, replicability, and testability of the theory they've worked hard to demonstrate—political scientists are flatly uninterested in the disruption that a demographic perspective would bring to current theories of state behavior, and ultimately to their own legacy.

[17] See, for example, Nicholas Eberstadt, "Russia: Too Sick to Matter?," *Policy Review* (June/July 1999), https://www.hoover.org/research/russia-too-sick-matter.

[18] Eberstadt, "The Dying Bear: Russia's Demographic Disaster," *Foreign Affairs* 90:6 (November/December 2011): 95-108.

[19] See NIC, *Global Trends: Paradox of Progress*, 2017, 162.

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