Neo-liberalism and Life Expectancy:

A Study in the Political-Economy of Population Health

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Abstract

Recent decades have seen nation states increasingly adopt neoliberal social policies, policies that stress free markets in the provision of social welfares, localization of services, and more minimalist government. While the rise of neoliberalism has spawned an extensive body of critique, there exists an almost universal view that neoliberalism is particularly detrimental for population health. At the same time, empirical evidence on the issue is quite weak, is limited in scope, and is ultimately equivocal. This paper assesses the relationship between neoliberalism and life expectancy through trend analysis of data from the Human Mortality Database (1960-2009) and complementary fixed-effects regression analyses of Supplemented World Bank Data (1970-2010 in five year intervals). We assess robustness of results by replicating the latter analyses for rates of infant mortality. Results show little evidence that life expectancy or infant survival has been compromised under neoliberalism. In contrast, population health in general is positively associated with increased neoliberalism and this association is particularly strong in poor economic contexts. Implications for theory and research are discussed.

Demographers and other social scientists have long-standing interests in the role of inequality in shaping population health (Brown, Hayward, Karas Montez, and Hummer 2012; Karas Montez, Hummer, Hayward, Woo, and Rogers 2011; Kawachi and Kennedy 1997; Lauderdale 2001; Moore and Hayward 1990; Preston 1975, 1985; Rogers 1992; Weatherby, Nam, and Isaac 1983; Wilkinson, 1992). At the same time, there is increased call for attention to the social and political factors that shape economic inequalities and their demographic and health consequences (Coburn 2004; Hout, Arum, and Voss 2010; Lynch 2000; Mackenbach 2014; Oakes and Kaufman 2006; Navarro and Shi 2001; Shaw, Dorling, and Davey Smith 2002; Terris 1999). There are also persuasive arguments in population studies that efforts to identify causal relationships can usefully look to the macro-level and consider "social rules, policies, and choice sets" as the background drivers of demographic phenomena (Smith 2003).

With this as background, an important and growing vein of social science research focuses on the emergence and global diffusion of 'neoliberalism' as the fundamental underpinnings of economic and social policy. Neoliberalism proposes that well being can best be achieved by strengthening private property rights, opening and encouraging free markets, and fostering free trade (Boas and Morse-Gans 2009; Camoroff and Camoroff 2001; Harvey 2005). As social policy, it views the role of government, particularly national government, as best when supporting such practices. Not surprisingly, both philosophy and practice emphasize smaller government and a greater free market for issues of social welfare (Boas and Morse-Gans 2009; Clarke and Newman 1997).

Although debates about the impact of neoliberalism are widespread, criticism has been particularly strong with respect to population health (Coburn 2000;

McCartney, Walsh, Whyte, and Collins 2012; McGregor 2001; Navarro 2007; Stuckler, King and McKee 2009; Terris 1999). Here, scholars emphasize the idea that neoliberalism increases inequality and fragments social capital at the macro-level and undermines access to and quality of health care at the micro-level. At the same time, empirical evidence is surprisingly weak and narrow in scope. In particular, previous research has seldom operationalized neoliberalism directly, has seldom connected political economic conditions directly to population health, and, even when having done so, has not adequately accounted for unobserved heterogeneity or temporal trends that can bias statistical estimates.

To extend understanding of political-economic influences on population health, this research examines of cross-national variation in life expectancy and infant mortality. The research has four dimensions. First, we compare trends in growth rates for life expectancy for decades that pre-dated (1960s and 1970s), initiated (1980s), and expanded (1990s and 2000s) the adoption of neoliberal policies for a sample of 33 countries drawn from the Human Mortality Database. Second, we examine panel data for a sample of 120 countries covering 1970 to 2010 (in five year intervals) to directly model the association between life expectancy and an index score of neoliberalism. Third, we consider the degree to which the consequences of neoliberalism are conditioned by economic context for the same sample of 120 countries. We then externally replicate the latter analyses with the alternative outcome of infant mortality rates. In different ways, these approaches account for time-stable differences across countries and strong temporal trends that could bias naive estimation through traditional covariate adjustment. Hence, they provide a rigorous assessment of the implications of expanding neoliberal policies for population health than seen in prior research.

Neoliberalism: A Short Introduction

There is little argument that the neoliberal turn in the latter part of the 20th century is a profound social transformation with vast scope that includes politics, economics, social welfare, and governance (Boas and Gans-Morse 2009; Harvey 2005). Neoliberalism is both philosophy and practice. Philosophically, it emphasizes the role of market deregulation, decentralization of services, and reduced state intervention in economic affairs (Cambell and Pederson 2001; Lash and Urry 1987). Although some add that the institutional elements have a fundamental pillar in a philosophy of individualism (McGregor 2001),[1] the central tenet is a belief in the effectiveness of unrestricted markets. As practice, neoliberalism involves institutional change, particularly with respect to labor markets, industrial relations, tax structures, and social welfare. While there is variation in definition and form in different national contexts (Fourcade-Gourinchas and Babb 2002), there is little debate that the core emphases of neoliberal policies are free market solutions to economic and social problems and advocacy for more limited and smaller government on issues of social welfare.

Neoliberalism and Population Health: Mechanisms

The idea of market solutions to economic and social issues has provoked strong criticism and has generated a number of theses about the detrimental consequences of neoliberalism for population health. For the purposes of simplification, we differentiate arguments into those that emphasize "upstream" or

[1] Critics offering the individualism thesis frequently reference the famous quote from Margaret Thatcher that "There is no such thing as society: there are individual men and women, and there are families."

distal determinants of health and those that emphasize "downstream" or proximal determinants of health (for a discussion of the distinction, see Oakes and Kaufman 2006).

'Upstream' Explanations

Upstream accounts of neoliberalism and health are situated within broad discussions of the political and economic context of social inequalities and health (Cerseto and Waitzkin 1986; Coburn 2000; Hofrichter 2003; Navarro 2004, 2007; Stuckler, King, and McKee 2009; Stuckler, Basu, and McKee 2010). Here, early research examined links between political-economic regime and social welfare policies and then links between social welfare policies, economic conditions, and population health. For example, Navarro and Shi (2001) compared a small sample of OECD countries and concluded that 'social pact,' total taxes, and size of the health, education, and welfare sector was highest in social democratic countries (e.g., Sweden and Norway) and lowest in liberal countries (e.g., Great Britain and the United States) and that the latter countries were seen to have significantly higher income inequality, higher unemployment, and lower public expenditure on health. As such factors are implicated in the dynamics of population health, rates of infant mortality were shown to be greater in liberal compared to social democrat countries (see also Navarro and colleagues 2006).

Extending such ideas, Coburn (2000) argues that neoliberalism reconfigures both the economic and integrative contexts of societies. First, more neoliberal regimes foster greater income inequality through a general privileging of the free market. As income inequality is seen as a key determinant of population health (Wilkinson 1992, 1997), health is compromised. Second, neoliberalism is deemed to

be antithetical to social cohesion and trust and population health declines under neoliberalism through the fraying of social capital. Increasing evidence highlights social capital as an important vector of better health standing (Kawachi, Kennedy, and Glass 1999; Kawachi, Kennedy, Lochner, and Prothrow-Smith 1997).

To our knowledge, there are only a handful of studies that constitute even partial tests of upstream theses of neoliberalism and population health and the evidence is ultimately quite mixed. Providing support for the thesis, Stuckler, King and McKee (2009) examine the effects of mass privatization on male mortality in selected former communist countries and conclude that privatization was associated with a mortality increase in the short-term and that this may be explained by large-scale unemployment. Also consistent, McCartney and colleagues (2012: Figure 4) report a small bivariate association between change in female life expectance and change in extent of neoliberalism between 1980 and 2006 for a sample of countries drawn from the Human Mortality Database.

Other research offers different conclusions. Navarro and colleagues' (2006) for example found no substantive relationship between tenure of pro-distributive governments and either female or male life expectancy across a number of nations. At the same time, Grubel (1998) reports positive bivariate associations between an index of neoliberalism and both human development and life expectancy in cross-national comparison (see also Esposto and Zaleski 1999 on neoliberalism and adult literacy). In a more detailed accounting, Tracy and colleagues (2010) examined data from 119 World Bank member countries on the relationship between different aspects of neoliberalism and child mortality for the period 1980 to 2004 and concluded that only access to sound money had a robust, statistically significant association. In the

end, the macro-level evidence on neoliberalism and health is equivocal and inconclusive.

'Downstream' Explanations

The main emphasis of downstream explanations of neoliberalism and population health is its impact on health care policy. Institutional analysts point to the 20th century, particularly the era after World War II, as a period where nation states assumed responsibility, in varied ways, for a wide range of social welfare provisions (Esping-Anderson 1990, 1999). This meant that access to social goods was not entirely dependent upon market forces and health care was a significant institutional feature of the emergent welfare state systems. With the transition to neoliberalism, critics argue that health policy increasingly emphasizes reductions in health costs for efficiency, decentralization of health services that minimizes the role of national government, and a transfer of responsibility to local and regional entities (McGregor 2001; Navarro 2007; Terris 1998). By definition, this implies deregulation and increased privatization. Derivative of this, critics argue that population health degrades.

Most of the evidence on downstream influences of neoliberalism on population health involves qualitative discussions of changes in health care and implications for population health. To date, research has focused on Germany (Helmert, Streich, and Borgers 2004), Italy (Costa, Caiazzo, Marinacci, and Spadea 2004), South Africa (Bond and Dor 2003), Spain (Rodriguez-Sanz et al. 2004), Sweden (Bursröm 2004) and the United Kingdom (Doran and Whitehead 2004). Terris (1999) also provides some discussion of health care reforms in Spain, Canada, and Mexico. Although there are subtleties in conclusions, the general consensus is

that contemporary health care reforms associated with neoliberalism compromise population health.

Terris (1999) extends such discussion by arguing that neoliberalism also increases environmental risks. Focusing on the Reagan administration budget of the early 1980s, Terris describes significant cuts in the budgets for the Centres for Disease Control, the Environmental Protection Agency, the Smoking and Health Program, and the Consumer Product Safety Commission (p. 150). At the same time, he describes reductions in funding for school lunch, food stamp, education, and nutritional programs, as well as cuts to regulatory programs that ensured basic standards of food quality. The essence of the argument is that the minimalist state approach advocated through neoliberalism undermines many of the public safeguards that are fundamental pillars of population health promotion. In summing up the overall impact, Terris (1999: 150) forcefully concludes that neoliberalism "will result in unnecessary illness, disability, and death not only for the poor, but for all classes of the population."

Whether the focus is upstream or downstream, contemporary discussions of neoliberalism almost universally predict detriments to population health. At the same time, the body of empirical evidence is quite thin. In some cases, the work is compelling but entirely theoretical (e.g., Coburn 2000; Navarro 2007). In other cases, evidence is largely focused on showing changes in the nature of health care systems or patterns of the delivery of health care without any direct connection to population health (e.g., Navarro 2007; Terris 1999). Finally, research that has both a cross-national and temporal quality is largely restricted to simple measures and bivariate correlations (McCartney et al. 2012; Navarro et al. 2006) or is open to concerns of omitted variable bias due to unobserved persistent heterogeneity (Esposto and Zaleski

1999; Grubel 1998). Even work that has more methodological sophistication either focuses on a limited number of contexts and a relatively short (and potentially misleading) time frame (e.g., Stuckler, King, and McKee 2009) or has produced inconclusive results (Navarro et al. 2006; Tracy et al. 2010).

Still, the political-economic contexts of population health and the specific question of the neoliberal turn warrant serious attention and are an important point of inquiry for research on population health in the 21st century. Moreover, the existing literature provides a straightforward line of inquiry. All the existing work posits neoliberalism as a general set of economic and social welfare policies that are *exogenous* to the immediate causes of (poorer) population health. In the case of upstream explanations, the increased adoption of neoliberal policies is seen to increase economic inequality and erode social capital with consequent impacts upon health. In the downstream cases, the increased adoption of neoliberal policies is seen to undermine the social welfare safety net with implications for income supports, public health activities, and access to health care. Given these, a necessary precondition is that neoliberalism as social policy *has negative effects* on population health or that population health significantly *degraded* in the increasing neoliberal era (i.e., 1980 and beyond). As a test of the population health consequences of neoliberalism and more general investigation of the political-economics of public health, we pursue these questions directly through complementary analyses of the socio-political determinants of life expectancy and further analyses of infant mortality.

[Table 1 about here]

Data and measures

To provide a broad based assessment of the effects of neoliberalism on population health, we use two complementary data sources. The first is the Human Mortality Database (hereafter HMD). The HMD is an online archive of life tables and vital statistics for a select number of countries over time (www.mortality.org). For our purposes, the current database has information on 33 countries representative of four of six continents with the exceptions being Africa and Antarctica. The countries used in the following analyses include the majority of OECD countries,[2] as well as non-OECD countries like Bulgaria, Lithuania, Russia, and the Ukraine. To capture the diffusion of neoliberalism and its association with population health, we construct a annual cross-national panel comprised of data for the 33 countries for the years 1960 to 2009.

The second set of data is constructed using data from the World Bank database (on-line) supplemented with data on the extent of neoliberalism, as well as a measure of gross domestic product per capita (hereafter WBS). The sample consists of 120 countries from five of six continents (with the exception being Antarctica) and spans the period 1970 to 2010 in five-year intervals. To our knowledge, this is the most extensive panel possible that incorporates direct measures of population health, neoliberal social policies of nation-states, and general economic conditions.

The vast literature including much of the critiques of neoliberal impacts on health care (e.g., Coburn 2000; McGregor 2001; Navarro 2007; Terris 1999), uniformly defines the neoliberal era as emerging in the late 1970s and early 1980s, the period which saw the

[2] The countries included are Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, England, Northern Ireland, Scotland, and Wales, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Northern Ireland, Norway, Poland, Portugal, Scotland, Slovenia, Spain, Sweden, Switzerland, and the USA. OECD countries not included are Greece, Korea, Mexico, and Turkey.

elections of the Thatcher and Reagan governments in the UK and the US, respectively, and achieving policy hegemony and global diffusion by the early 1990s. The breakup of the Soviet Union in the early 1990s is deemed a particularly significant development in the global expansion of neoliberal governance (Harvey 2005; Navarro 2007). Given this, there is a reasonably well-defined era where there was increased diffusion of neoliberalism across countries and increased, yet variable, neoliberal instutionalization over time (1980s through 2000s). Both sets of data capture this well.

Focal Measures

Given our objectives and the analytic strategy (described below), our models are deliberately parsimonious. The key outcome is period life expectancy at birth that summarizes information across all age-cohorts that were alive at a particularly point in time, typically January 1 of each year. As arguments about neoliberalism and population health articulate far reaching consequences, life expectancy at birth is a particularly useful outcome given that it accumulates information over entire populations in a given context at a given time and hence is a particularly democratic measure of population health (Firebaugh and Beck 1994).

For the purposes of assessing robustness of results, we further consider rates of infant mortality as indicators of population health. While referencing only a slice of the age-range, rates of infant mortality have the advantage of being entirely period focused and hence correspond in time with political-economic conditions.[3] Hence, they are a strong indicator of the health of entire populations, "reflecting the intuition that structural factors affecting the health of entire populations have an impact upon

[3] One limitation to using life expectancy at birth as a period measure is that it is based on a synthetic cohort design and has survivorship built into it (i.e., you need to have lived to age five to be five years old in a given period. This means that some of the factors that influence life expectancy predate, often by decades, the point of measurement.

the mortality rate of infants" (Reidpath and Allotey 2003: 344). These data are also drawn from the World Bank database and were provided by the UN Inter-agency Group for Child Mortality Estimation (UNICEF, WHO, World Bank, UN DESA Population Division)

The focal independent measure of neoliberalism comes from the annual compilations of the Fraser Institute for their annual "Economic Freedom of the World" reports (Gwartney, Lawson, and Hall 2013) and made available in a recently created web portal (http://www.freetheworld.com). The Economic Freedom of the World (hereafter EFW) index is a composite measure of 42 markers of neoliberal policies, including measures of the size of government, legal structures, property rights policies, currency evaluations, trade policies and practices, and the overall regulatory environment with respect to business. The Institute provides a summary score for the broadest number of countries in a given year with higher scores indicating greater economic freedom and the extent of neoliberal infrastructure (Esposto and Zaleski 1999; Grubel 1998; McCartney et al. 2012; Tracy et al. 2010). For relevant analyses, we assign the index score to each country in each year to fill out the respective cross-national panels.

Given the diversity in social and economic conditions with the World Bank sample, we also incorporate a measure of gross domestic product per capita from the Maddison database (www.worldeconomics.com). This measure serves two purposes. First, it is a control for general economic conditions that would be correlated with extent of neoliberalism and hence confound estimation. Second, it provides an opportunity to consider the degree to which neoliberal effects, if any, are conditioned by the general economic context of a country. There is increasing evidence of wide adoption of neoliberal policies across nation-states (Harvey 2005) that have shifted it

away from the early adopters of OECD countries. To consider whether there is important variation in the consequences of neoliberalism for population health in countries with vastly different economic environments and state-capacities is an important examination of the scope of impact.

Table 1 presents descriptive statistics for both the HMD and WBS data. Two preliminary points warrant mention. First, the summary statistics attest to the utility of analyses using both samples. While minimum life expectancy in the HMD data on or after 1990 is 57.4 (males in Russia – 1994), the minimum life expectancy in the WBS data is 20.69 (males in Cambodia in 1975). In fact, there are 372 country-periods in the WBS that are below the minimum of male life expectancy for the HMD data. Similarly, there are 462 country-periods in the WBS data that are below the HMD minimum for female life expectancy (65.5 for Portugal in 1961). Second, the data show the range of neoliberal and economic contexts captured by the data. In the former case, the lowest extent of neoliberalism is seen in Nicaragua in 1985 (1.78), while the greatest extent is seen in Hong Kong in 1995 (9.14). Similarly, the poorest economic context has an extremely low GDP per capita of $58.6 (Rwanda in 1970), while the richest economic context has a per capita GDP of $102,900 (Luxembourg in 2010). In sum, there are clearly different parts of the distribution of life expectancy, neoliberalism, and economic conditions captured by the different data sources and this attests to the value of using both data sources for examining neoliberalism and population health.

[Figure 1 about here]

Analytic Strategies

With these data, we estimate two types of models. First, we estimate ***trend analysis*** using conventional difference-in-difference (D-I-D) regression models with leads and lags to examine the degree to which growth rates in life expectancy have changed in the neoliberal era (1980-2009). More formally, the model estimated is

$$LE_{ij} = \alpha + \sum_{i=1}^{I} \beta_i Country_i + \delta Year + \sum_{k=1}^{K} \phi_k Decade_k + \sum_{l=1}^{L} \varphi_l Country_i * Decade_k + \sum_{k=1}^{K} \gamma_k Decade_k * Year + \sum_{i=1}^{I} \lambda_i Country_i * Year + \sum_{m=1}^{M} \eta_m Country_i * Decade_k * Year + \varepsilon_{ij}$$

The key parameters of interest in this model are the η_ms that capture the deviation in the annual growth rate in the 1970s, the 1980s, the 1990s, and the 2000s (compared to that seen in the 1960s) and hence show whether trajectories of life expectancy changed in the neoliberal era. To account for autocorrelation that can bias standard errors, models are estimated with a Newey-West correction (Newey and West 1987). For purposes of simplification, we show only the η_ms with their respective confidence intervals in graph form.

Second, we use conventional fixed effects estimation (hereafter FE) to better specify causal ***effects***. Still operating within a regression framework, the simplest set up estimates the association between the EFW index scores and life expectancy for each country at each time period while including dummy variables for i-1 countries and for j-1 time periods to account for time-stable country specific factors, as well as temporal trends, that could bias parameter estimates of the association between neoliberalism and life expectancy. More formally,

$$LE_{ij} = \alpha + \phi EFW_{ij} + \sum_{i=1}^{I} \beta_i Country_i + \sum_{j=1}^{J} \delta_j Time_j + \varepsilon_{ij}$$

where LE_{ij} is the measure of male or female life expectancy at birth for country *i* in year *j*, α is the intercept, ϕ, the focal parameter, is the effect of *EFW* index score

measured for country i at time j, the β_is are coefficients indexing country-specific dummy variables, and the δ_js are coefficients indexing time-specific dummy variables, and ε_{ij} is the idiosyncratic disturbance.

Finally, we consider the conditioning effects of economic context by elaborating the fixed effects model to incorporate a measure of GDP per capita and its interaction with extent of neoliberalism. More formally,

$$LE_{ij} = \alpha + \phi EFW_{ij} + \varsigma LN\_GDPPC_{ij} + \psi EFW_{ij} * LN\_GDPPC_{ij} + \sum_{i=1}^{I} \beta_i Country_i + \sum_{j=1}^{J} \delta_j Time_j + \varepsilon_{ij}$$

where the earlier model includes ψ to capture the conditioning effect of (logged) gross domestic product per capita (LN_GDPPC) on the effect of the EFW index score. For purposes of comparison, we report both the standard OLS coefficients alongside those derived from the fixed-effects estimations. As with the difference-in-difference estimation, the fixed-effects models incorporate a correction for autocorrelation, in this case using both an autoregressive (AR1) approach and a Newey-West correction.

Results

Beginning with the trend analyses, figures 1 and 2 provide an initial lens on the association between neoliberalism and life expectancy from 1960 to 2009 using the HMD data. Here, we estimate country-specific models that compare the rates of growth in life expectancy across five decades spanning 1960 to 2009 (with that of the 1960s being the reference category). In conceptual terms, these estimates assess whether population health has been undermined in the neoliberal era, post-1980, by specifically examining changes across decades in the growth rate of life expectancy in the period characterized by the increased adoption of neoliberal philosophy and practices. The figures show the relevant regression coefficients for growth across

decades, as well as their confidence intervals. Of particular relevance, estimates with confidence intervals below zero indicate statistically significant decreases in growth relative to the 1960s, a relative decline in population health.

As a general summary of a fair amount of information, analysis of relative change in growth rates provide little evidence that population health degraded in the neoliberal era. For female life expectancy (see Figure 1, panels A through D), there are three important results. First, there is little overall evidence that the rate of growth declined in the neoliberal period. Nine countries showed negative relative growth in the 1970s relative to the 1960s, the "lead" period that most scholars view as pre-dating the neoliberal turn. In the first decade of neoliberalism, the 1980s, twelve countries showed negative relative growth. By the 1990s, eight showed negative relative growth in the 1990s, and in the 2000s six showed negative relative growth in the 2000s. At the same time, eight, eight, and sixteen countries showed positive growth in female life expectancy during the 1980s, 1990s, and 2000s. The remainder showed no significant differences.

[Figure 2 about here]

Second, there is little evidence that negative growth increased over time, although all evidence indicates that extent of neoliberalism increased over time. The number of countries showing negative relative growth decreased from twelve in the 1980s to eight in the 1990s and to six in the 2000s. Finally, there is no evidence that negative growth is associated with greater extents of neoliberalism. Of the eight countries showing relative negative growth in the 1990s, three would fall in the lower range of neoliberalism (i.e., Belarus, Bulgaria, and Russia), while three would fall at

the higher range of neoliberalism (i.e., Canada, Japan, and the USA). Similarly, of the six countries showing relative negative growth in the 2000s, only three would be characterized as having strong extents of neoliberalism (i.e., Canada, Japan, and Sweden). In short, most countries showed either constant or increasing growth in female life expectancy in the increasingly neoliberal decades, this did not increase over time, and there was no visible association with the extent of neoliberalism.

For males (see Figure 2), there is even less evidence of relative negative growth in the neoliberal era. First, seven countries showed relative negative growth in the 1970s, the period prior to the neoliberal turn. In the 1980s, there were four countries showing relative declines in growth. In the 1990s and 2000s, only two and one, respectively, showed relative declines. At the same time, twenty-one countries showed relative growth in life expectancy in the 1980s and this increased to twenty three and twenty six in the 1990s and 2000s. Second and derivative, the number of countries showing relative declines in growth rates declined over time, from four to two between the 1980s and 1990s and from two to one between the 1990s and 2000s. Finally, there is no association between extent of neoliberalism and relative growth rate. The four countries showing negative growth in the 1980s are Bulgaria, Japan, Poland, and Spain and cross-cut the distribution of neoliberalism. Similarly, negative growth was seen in Belarus and Japan in the 1990s and these countries literally sit at opposite ends of the neoliberalism spectrum. In the 2000s, only Japan showed negative growth. As in the case of female life expectancy, the vast majority of countries showed consistent or positive growth, this did not change over time (and perhaps even got stronger), and there is no visible association with extent of neoliberalism.

[Table 2 about here]

While period comparisons provide little support for the thesis that population health has degraded in the neoliberal era, period differences can be subject to different interpretations (e.g., temporal patterns of technological development may off-set the negative effects of neoliberalism). Given this, we proceed next with a more direct and rigorous assessment. Table 2 reports coefficients for a series of regression analyses examining the association between the EFW index and life expectancy at birth. In model 1, the bivariate association between neobliberalism and population health is large, positive, and statistically significant ($b = 5.134$, $p < .05$). When GDD per capita is included in model 2, the latter has a large effect ($b = 5.481$, $p < .05$) and the neoliberalism effect is substantially reduced but remains statistically significant ($b = .662$, $p < .05$). In terms of magnitude, the latter effect is not particularly large, approximately 6 percent of the standard deviation of life expectancy. Still, such estimates should however be treated with skepticism as they are highly likely to be biased due to unmeasured heterogeneity. We mitigate this in models 3 and 4 by including fixed effects for country and year. Importantly, the effect of neoliberalism is largely unchanged ($b = .656$, $p < .05$), while the effect for GDP per capita is essentially eliminated ($b = .289$, *ns*). When we incorporate a correction for autocorrelation, the standard error for the coefficients increase somewhat, but the overall conclusions do not change: neoliberalism has a positive effect on female life expectancy. While not particularly large, the effect is still robustly contrary to the expectations from the literature. In results not shown, it is the inclusion of the controls for time trends that eliminates the GDP per capita effect, rather than the controls for time-stable, country specific effects.

In the case of male life expectancy, conclusions are reinforced. The OLS model (model 7) shows a large, positive bivariate association ($b = 4.646$, $p < .05$) that is substantially reduced but still statistically significant ($b = .848$, $p < .05$) when GDP per capita ($b = 4.656$, $p < .05$) is included in model 2. With controls for country and year fixed effects and GDP per capita (model 10), the effect of neoliberalism maintains magnitude and statistical significance ($b = .710$, $p < .05$), while the effect of GDP per capita is not significant ($b = .117$, *ns*). As before the correction for autocorrelation (models 11 and 12) only change the magnitude of the standard errors and the neoliberalism coefficients remain statistically significant. In general, the models support the conclusion that neoliberalism has a small positive effect on population health and this is consistent across sexes. Equally important, these effects are not explained by general economic conditions once there are appropriate controls for country-specific and time effects. As a check on the fixed effects assumptions, we performed Hausman tests and found strong support.

[Table 3 about here]

We next consider the conditioning effect of economic context on neoliberalism by estimating the interactions between the economic freedom of the world index and (logged) GDP per capita. There are four models for life expectancy of each sex, an OLS model with controls for time, a model with country- and time-fixed effects, an autoregressive (AR1) model with country-and time-fixed effects, and a model with a Newey-West correction for autocorrelation, and these are shown in Table 3. Although magnitudes vary depending upon the model, the interaction terms are consistently statistically significant and negative. Using the estimates in models 4

and 8, we have calculated the implied effects and their standard errors and have graphed these in Figure 3.

For female life expectancy, these effects show that neoliberalism has large positive effects in lower income contexts. Here, the relevant b-coefficients are greater than 1.0 for country-periods with a GDP per capita less than $493 (6.2 on the logged scale). This accounts for approximately 25 percent of all country-periods in the data. At the same time, there are statistically significant negative effects in general for country-periods with GDP per capitas less than $1,339 (7.2 on the logged scale) and this accounts for 45 percent of all country-periods. Effects are not statistically significant for country-periods ranging from $1,340 to $9,897 (9.2 on the logged scale) and this accounts for another 35 percent of countries periods. Finally, there are estimated negative effects of neoliberalism on female life expectancy for country-periods in the top 20 percent of GDP per capita, but only 3 percent fall in the range where the estimated effect of neoliberalism exceeds one (i.e., $1/10^{th}$ of a standard deviation or a small to moderate effect size).

Effects for male life expectancy are similar. Below 403 dollars in GDP per capita (6.0 on the logged scale), the effect of neoliberalism is greater than one or larger than one-tenth of a standard deviation in life expectancy. This accounts for 20 percent of country-periods. In general, there are statistically significant negative effects for country-periods up to a GDP per capita of $3,295 (8.2 on the logged scale) which corresponds to 62 percent of country-periods. Effects then become null and remain so through the top of the GDP per capita distribution. [Extrapolating the slope, effects would hypothetically turn negative at a GDP per capita of over $110,000. In the current distribution, there is a single country-period, Luxembourg in 2010, that has a GDP per capita that approximates this value.] In sum, neoliberalism

is either positively associated with life expectancy or does not have a statistically significant association across levels of economic development.

[Figure 3 and 4 about here]

Replication Results

Finally, we seek to replicate these results using rates of infant mortality as our indicator of population health. We estimate three sets of models, OLS models without country or time-fixed effects, models with country and time fixed effects, and models with country and time fixed effects coupled with a Newey-West correction for autocorrelation. The resulting coefficients are shown in Table 4.

Beginning with the OLS models, the neoliberalism indicator has a large bivariate association with rates of infant mortality ($b = -19.341$, $p < .05$). When GDP per capita is included (model 2), the effect of neoliberalism is substantially reduced but remains statistically significant ($b = -4.358$, $p < .05$). Finally, the interaction of neoliberalism and economic context is also statistically significant and indicates diminishing returns to neoliberalism with increasing GDP per capita. When controls for country and time are included (models 4 through 6), the effect of neoliberalism is robust including conditioning on economic conditions ($b = -3.868$, $p < .05$). Equally important, the product term capturing the interaction of neoliberalism and GDP is also robustly significant ($b = 4.417$, $p < .05$). Finally, when we correct for autocorrelation, conclusions are unchanged.

As in the cases of life expectancy, we show the conditioning effect of GDP per capita on neoliberalism by calculating the estimated effects with their standard errors and graphing them. These are shown in Figure 3. In the poorest contexts (GDP per

capita less than $403 (6 on the logged scale)), neoliberalism has a moderate to large, approximately one-quarter of a standard deviation, negative effect on infant mortality and this accounts for 20 percent of the country periods. In general, there are negative effects on infant mortality up through contexts with a GDP per capita of $1,636 (7.4 on the logged scale) and this accounts for another 30 percent of country periods. Beyond this, effects are null through $3,641 (8.2 on the logged scale) and this accounts for another 16 percent of country periods. While the estimated effects appear to turn positive, detrimental to infant mortality, at higher GDP levels, there do not appear to be reasonable points of support. Unlike life expectancy values, rates of infant mortality in the wealthiest countries are close to zero and lack variance and hence cannot produce a "true" association with neoliberalism.[4] For the purposes of balance, however, we show estimates up through a GDP per capita of $8,103 (9 on the logged scale) which covers over three-quarters of all country periods.

[Table 4 about here]

Discussion

Recent decades have seen a radical re-orientation of the basic philosophies underlying social welfare provisions, including health care. Beginning in the 1980s, there was the development, diffusion, and institutionalization of neoliberal philosophy and practice around issues of economics, politics, and social welfare. Critics have referred to this as a 'recommodification' of services that were essentially

[4] We assessed this directly using a variation of a moving regression approach. Specifically, we estimated models on the subset of country periods where logged GDP per capita was greater than 7, greater than 8, and greater than 9. None of the effects were positive and statistically significant. We also examined whether a quadratic effect could capture the apparent non-linearity, but there is not enough power with the data to do so (i.e., too few cases and limited variance on the outcome).

'decommodified' with the rise of the Keynesian Welfare State (Coburn 2000). Within the broad scope of change, concerns over increases in inequality and the re-organization and delivery of health care have received specific attention. Here, the literature overwhelmingly argues that recent changes are detrimental to the well being of populations (Coburn 2004; Navarro 2007; McGregor 2001; Terris 1999).

This research used statistical techniques that control for both country-specific and time-specific factors to estimate the effects of neoliberalism on life expectancy. The most benign conclusion is that there is little evidence that the neoliberalism has undermined population health. Trend analyses show much more evidence that growth is unchanged or actually increased in the neoliberal era. Similarly, fixed effect estimation show small but statistically significant positive effects on life expectancy. Moreover, these effects are replicated with infant mortality as an outcome. Such results stand in stark contrast to the expectations, hypotheses, and even conclusions of almost all prior research. Given the overwhelming expectations in the contemporary literature, it is worth reiterating that there is little evidence that the adoption of neoliberal philosophies, practices, and policies, factors that have clearly influenced the nature and delivery of health care across countries and may be implicated in increased economic inequalities, has generically undermined life expectancy.

[Figure 5 about here]

At the same time, there is further evidence that there are positive effects of neoliberalism that are quite strong in contexts where state capacity is low, the world's poorest countries, and that these positive effects are more pronounced for female life expectancy. The essential feature of the Keynesian Welfare State model was the use

of taxation as a mechanism of supporting the state provision of welfare (Comaroff and Comaroff 2001; Harvey 2005). Given this model, economic conditions are fundamental drivers of state capacity for welfare provision. While our research cannot pinpoint why more extensive neoliberalism is particularly beneficial in the lowest income contexts, it seems plausible that a neoliberal philosophy encourages public and private partnerships that may be particularly beneficial when the state is essentially unable to provide any form of welfare provision (Pearce 2006). Here, gains in life expectancy in low-income countries may reflect the introduction of vaccines, medicines, and medical services that combat infectious diseases. Importantly, the diffusion of such medicines is more likely in low-income, more neoliberal countries that are more engaged in contact and trade with other countries that make them more open to outside influences, including more advanced medical technology. Also, given that health care delivery in such contexts may be more preventative in nature, target infectious diseases, and focus most on morbidity and mortality among infants, children, and pregnant women (Green 1999; Jack 1999; Walsh and Warren 1979), there may be particular effects for female life expectancy and infant mortality.

Given the gap between the empirical evidence presented here and the academic discourse on neoliberalism and population health, it seems necessary to consider why neoliberalism may not be the universal detriment that it has been previously described as. There are three points worth stressing. First, the upstream model that emphasizes inequality, social capital, and/or their interaction relies on the strength of the evidence that these mediating factors are themselves important determinants of health. While Wilkinson (1992, 1997) has been a strong advocate of the inequality argument and a psychosocial interpretation, others (Davey Smith 1996;

Kaplan et al. 1996; Lynch 2000) have stressed a more neo-material interpretation where neoliberalism is associated with diminished individual resources for large (and potentially growing) segments of populations and simultaneous disinvestment in community infrastructure. Similarly, the social capital argument has also received its fair share of criticism with some even suggesting that such arguments deflect attention from the real sources of health inequalities (Lynch, Due, Muntaner and Davey Smith 2000; Muntaner and Lynch 1999). Moreover, given that there is an addition link in the causal chain, the role of neoliberal philosophy and political-economic policy, it may simply be that the causal mechanisms offered are incorrect, at least with respect to life expectancy.

At the downstream level, there are additional issues. A key feature of health care reform under neoliberalism is that the nation state becomes less involved in the delivery of health care services. Theoretically, it is not clear why national governments would be the most capable entity for the delivery of such services. Still, this is the prevailing assumption in the literature. Empirically, even critics point out that a hallmark of neoliberal public policy is the increased localization of services. As McGregor (2001) notes, neoliberalism in principles emphasizes localization to cater to local preferences, to improve implementation, to reduce inequalities, to increase community involvement, and to improve integration of public and private agencies. While the argument does not necessarily generalize to all aspects of social welfare, there may be particular benefits that come with a more localized health care infrastructure. From one perspective, different populations have different health profiles and health problems. From another perspective, there are clear social demographic and social geographic patterns to risk behaviors. In light of both, increased localization of health care may actually provide a better fit to the health

needs to given populations and subpopulations given the ability to better utilize local knowledge to target specific types of health dynamics.

The central objective of this research was to investigate the aggregate effect of neoliberalism on population health and the results indicate little support for the idea that health is compromised. At the same time, we do not speak to the issue of health inequalities and how these fare in the context of neoliberalism. Here, there is some evidence that aggregate and group-specific health fair differently in neoliberal contexts. Karas Montez and colleagues (2011) for example report substantial differences in trends in mortality risk among across race-sex-education subgroups in the US between 1986 and 2006. Importantly, low educated Black and White women actually showed increases in mortality risk over time, a phenomenon that would appear to break a several decade trend in declining mortality risk across all such groups (see also Olshansky et al. 2012). Given that the US is often described as an ideal-typical neoliberal regime and, with the UK, led its global diffusion in the latter decades of the 20th century, evidence of increasing health disparities in this context may be an important signal of important population heterogeneity in the consequences of neoliberalism for population health. Still, such evidence is indirect on question of neoliberalism and population health and the issue of health disparities should be an important and necessary avenue of future research.

There are three key strengths of this study. First, life expectancy is a particularly democratic indicator of health (Firebaugh and Beck 1994). Its calculation is based on synthetic-cohort design that accumulates mortality information from all birth cohorts that are alive at the start of a given year. As such, it can be seen as a weighted average of a population's health profile and hence indicates the degree to which large-scale social policies such as increasing neoliberalism influences

population health in general. That the results are backed up by estimates for infant mortality strengthen conclusions. Second, we adopt more sophisticated, albeit simple and intuitive, analytic strategies than used in prior work that allows for countries to serve as their own 'control' groups and thus purge time-stable characteristics of countries and general trends in the data. Although by no means perfect, the approach allows for better assessment the causal impact of social policies. At the same time, these forms of fixed-effects analyses combined with longer time frames are clearly an improvement over previous studies (McCartney et al. 2012; Navarro et al. 2006; Navarro and Shi 2001; Stuckler, King and McKee 2009). Broader data and more rigorous analyses may be the source of the different and less pessimistic results seen in this research in comparison to that conducted previously. Third, the samples contain a broad range of countries that show a variety of trends in life expectancy in the post-war period and encompass a broad range of neoliberal policy penetration.

At the same time, there are limitations. Neoliberalism is a notoriously loose concept (Boas and Gans-Morse 2009) and our operationalizations as a period effect and a dose effect are by no means the only way to think about measuring and modeling effects. In the former case, the period effect approach is always open to alternative explanations. In other words, are there other features of the social, political, and economic world that produce the effects that we observe other than neoliberalism? Importantly, such effects would need to be exogenous to the large-scale political and economic restructuring characteristic of neoliberalism to challenge our interpretations. This is certainly the logic of causal relations offered in much prior research (e.g., Coburn 2000; Navarro et al. 2006) and an explicit rationale for greater consideration of political-economic policy environments (Hout et al. 1996). Although we have considered this issue at some length, it is not entirely clear what

such factors could be. Still, the embedded relationship between neoliberalism as state processes and globalization as inter-state relationships complicates attribution of cause, particularly as the latter has sometimes been associated with improvements in population health (Walt 1998).

There are also limitations in using period life expectancy as a measure of population health. While it has the advantage of being quite "democratic" in that it summarizes information about mortality risk for all cohorts in a given year, it glosses over the history of a given cohort. For example, mortality risk for those between 60 and 65 in 2000 reflects survivorship up to ages 60 to 65. For people to be at risk of dying at age 60 in 2000, they must have survived to age 60 and clearly there are factors that have influenced this process and are not captured by our models. We have attempted to mitigate this with controls for time-stable country-specific effects and time trends, but the periodization of neoliberalism is finite and does not encompass the entire age-range that informs calculations of life expectancy at birth. We also hope that replication with rates of infant mortality as an outcome moderates this criticism.

We also cannot claim to have controlled for all potential confounders of the association between neoliberalism and life expectancy. While the models we use eliminate time stable effects and trends, there is always the possibility that time-varying factors are also influential and correlate with neoliberalism. We have accounted for an obvious factor, general economic development, but admit that there are other possible factors. We explored a number of factors including exposure to the AIDS epidemic, exposure to wars and other civil conflicts, and exposure to famine or other ecological disasters and our conclusions remain the same. Still, it remains an open question and one warranting further research.

Conclusions

There are clear and important implications of increasing neoliberalism for the role of the state in the delivery of health care. At the same time, there was surprisingly little research on population health nor research that systematically and empirically assesses of health trends within countries, to account for time stable characteristics of countries that influence variation in population health, before and after the neoliberal turn (1980-1990). The evidence presented in this paper challenges both the pessimistic view of the existing literature and fills an important evidentiary gap. Analyses of time trends in life expectancy across nations with varying levels of neoliberalism provide no evidence that health is undermined and some evidence that it is enhanced in the neoliberal era. In this respect, the findings add to and extend the conclusions of Tracy and colleagues (2009: abstract) that "the concept of neo-liberalism is not monolithic entity in its relation to health and that some 'neo-liberal' policies are consistent with improved population health." Yet, such views are swamped in the current discussions by claims that neoliberalism is universally bad for population health (Coburn 2000; McCartney et al. 2012; McGregor 2001; Navarro 2007; Stuckler, King and McKee 2009; Terris 1999). And while we recognized that the institutional structure of health care may not be typical of social welfare services that currently operate in free market contexts, the issue of whether such services are inherently undermined in a free market setting should be established through empirical analysis rather than theoretical speculation. Still, our findings should not and will not be the last word on the subject and we hope that this research at minimum provides balance to the discussion and sparks more empirical work on the trends and trajectories of health and its population variance in relations to political-

economic processes, including the continually expanding neoliberal paradigm. Given the increasingly global spread of such philosophies and practices (Comaroff and Comaroff 2001; Harvey 2005), future opportunities for analyses with greater scope should be readily available.

A profound challenge for population health research is to coherently reconcile 'upstream' factors such as large scale political-economic policies with 'downstream' proximal causes of health and disease such as smoking, alcohol consumption, poor diet, lack of exercise, access to care, etc. At the same time, there are important lessons to be learned about causal determinants of population dynamics through studying time-space variation in large-scale social and political processes (Smith 2003). In this context, the issue of population health and its connection to neoliberal philosophies and change in the structure and operations of social institutions is an important arena of research and a question that has received specific and increasing attention across the social sciences (Coburn 2000; McGregor 2001; McCartney et al. 2012; Navarro 2007; Terris 1999; Tracy et al. 2010). Within this literature, neoliberalism, even the word itself, has been predominantly used as critique and as a description of practices that fundamentally undermine population health by fostering inequality of conditions and inequities of access and utilization of health care.

Against this backdrop, we do not know specifically how neoliberal policies have restructured the provision of health care. Changes are likely profound. At the same time, our analyses detect no detrimental effect on life expectancy. As life expectancy is a gold standard for population health, it is at least questionable that neoliberal policies and their implementation have had significant negative impacts on population health. Moreover, neoliberalism and its institutional expressions may in fact be associated with significant improvements in population health, particularly in

contexts where state capacity for social welfare is low. Given the importance of health as an indicator of human development and the well being of populations, the translation of political and economic philosophy into the conditions of everyday life should be a central feature of contemporary research agendas across the social sciences.

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Table 1. Descriptive Statistics, World Bank Data Supplmented 1970-2010 (120 Countries) in Five Year Intervals & Human Mortality Database 1960-2009 (33 Countries).

Data Source	Variable	Mean	SD	Minimum	Maximum	Country-Years
World Bank Supplemented						
	Female Life Expectancy	67.327	11.656	26.921	86.3	1278
	Male Life Expectancy	62.446	10.350	20.687	80.1	1278
	Infant Mortality	49.741	42.999	1.9	202.9	1210
	Economic Freedom of the World Index	6.045	1.343	1.78	9.14	930
	GDP per capita	6,706.264	11,625.41	58.569	102009.4	1135
	Logged GDP per capita	7.567	1.646	4.070	11.533	1135
Human Mortality Database						
	Female Life Expectancy	77.037	3.297	65.49	86.42	1746
	Male Life Expectancy	70.176	4.254	57.38	79.78	1746
	Year	1984.5	14.435	1960	2009	1750

Table 2. **Parameter Estimates: Life Expectancy at Birth Regressed on the Economic Freedom of the World Index Conditional on GDP per Capita, 1970-2010 (five year intervals).**

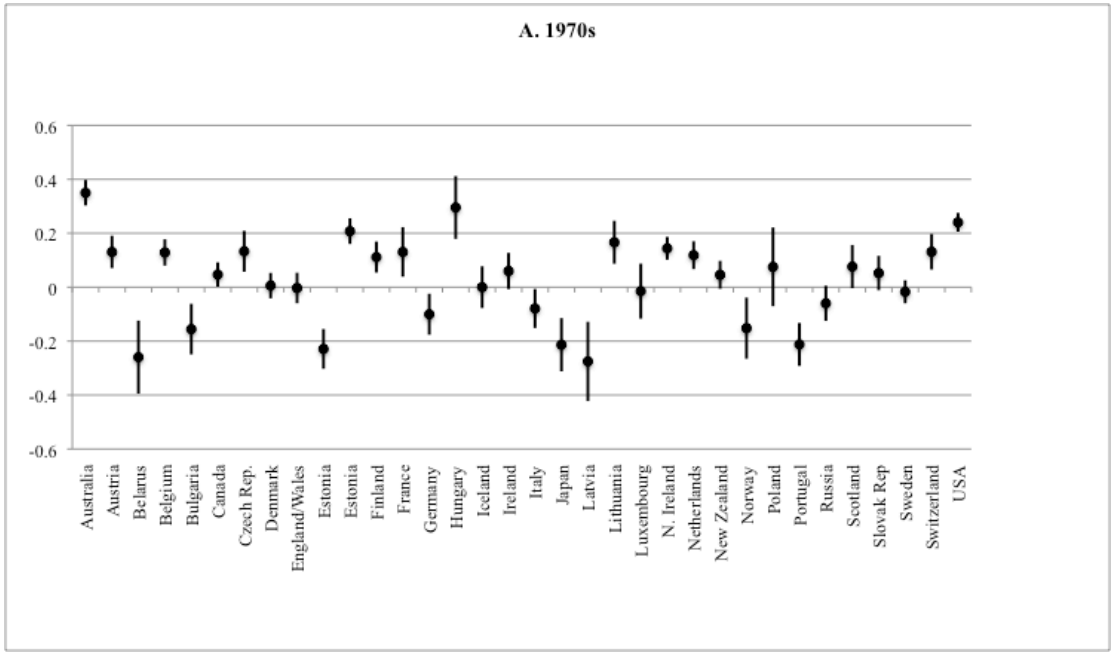
A. Females	(1)	(2)	(3)	(4)	(5)	(6)
Economic Freedom of the World Index	5.134**	.662**	.656**	.680**	.656**	.680**
	(.212)	(.221)	(.183)	(.189)	(.202)	(.207)
Logged GDP per Capita	.---	5.481**	.---	.289	.---	.289
		(.181)		(.329)		(.389)
Time Fixed Effects	No	No	Yes	Yes	Yes	Yes
Country Fixed Effects	No	No	Yes	Yes	Yes	Yes
Correction For Autocorrelation	No	No	No	No	Newey-West	Newey-West
Sample N	120 (902)	120 (902)	120 (902)	120 (902)	120 (902)	120 (902)
B. Males	(7)	(8)	(9)	(10)	(11)	(12)
Economic Freedom of the World Index	4.646**	.848**	.663**	.710**	.663**	.710**
	(.187)	(.196)	(.165)	(.174)	(.180)	(.190)
Logged GDP per Capita	.---	4.656**	.---	.117	.---	.117
		(.158)		(.320)		(.378)
Time Fixed Effects	No	No	Yes	Yes	Yes	Yes
Country Fixed Effects	No	No	Yes	Yes	Yes	Yes
Correction For Autocorrelation	No	No	No	No	Newey-West	Newey-West
Sample N [Country (Country-Periods)]	120 (902)	120 (902)	120 (902)	120 (902)	120 (902)	120 (902)

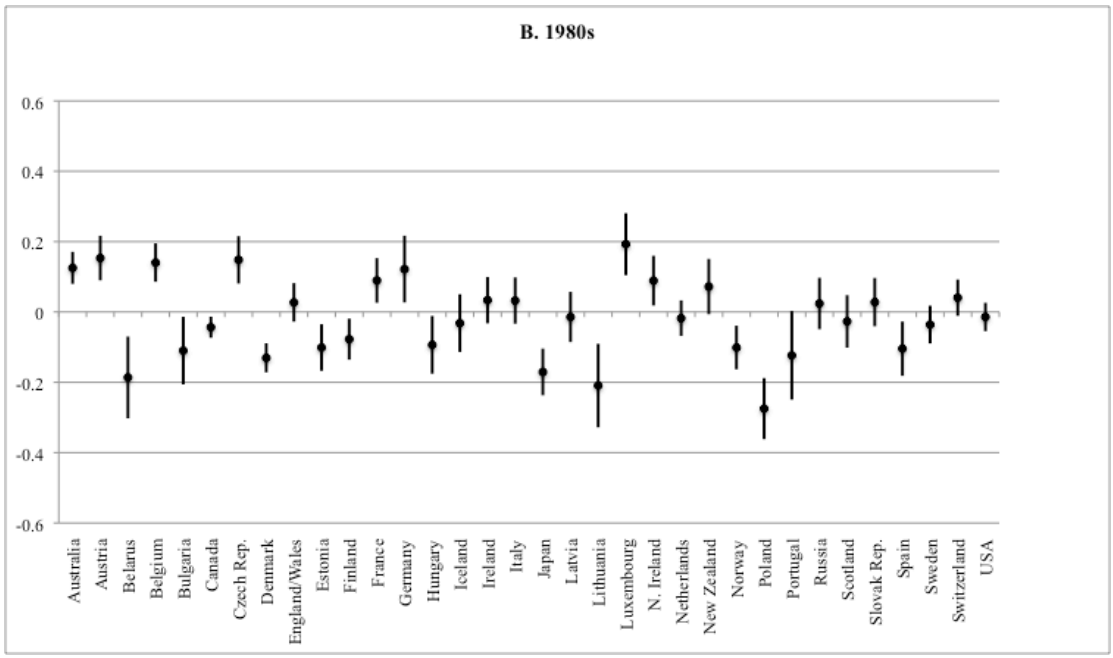
Table 3. **Parameter Estimates: Life Expectancy at Birth Regressed on the Economic Freedom of the World Index Conditional on GDP per Capita, 1970-2010 (five year intervals).**

A. Females	(1)	(2)	(3)	(4)
Economic Freedom of the World Index	7.516**	3.901**	1.576**	3.901**
	(.850)	(.571)	(.405)	(.635)
Logged GDP per Capita	11.280**	3.874**	1.340**	3.874**
	(.683)	(.627)	(.373)	(.681)
Interaction: EFW X GDP per Capita	-.892**	-.465**	-.163**	-.465**
	(.101)	(.068)	(.054)	(.076)
Time Fixed Effects	Yes	Yes	Yes	Yes
Country Fixed Effects	No	Yes	Yes	Yes
Correction For Autocorrelation	No	No	AR1	Newey-West
Sample N	120 (902)	120 (902)	120 (782)	120 (902)
B. Males	(5)	(6)	(7)	(8)
Economic Freedom of the World Index	5.568**	2.639**	1.387**	2.639**
	(.752)	(.495)	(.403)	(.540)
Logged GDP per Capita	8.710**	2.271**	.696**	2.271**
	(.618)	(.609)	(.373)	(.668)
Interaction: EFW X GDP per Capita	-.622**	-.279**	-.122**	-.279**
	(.091)	(.061)	(.054)	(.067)
Time Fixed Effects	Yes	Yes	Yes	Yes
Country Fixed Effects	No	Yes	Yes	Yes
Correction For Autocorrelation	No	No	AR1	Newey-West
Sample N [Country (Country-Periods)]	120 (902)	120 (902)	120 (782)	120 (902)

Table 4. **Parameter Estimates: Infant Mortality Regressed on the Economic Freedom of the World Index Conditional on GDP per Capita, 1970-2010 (five year intervals).**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Economic Freedom of the World Index	-19.341**	-4.358**	-43.566**	-2.528**	-3.868**	-34.476**	-2.528**	-3.868**	-34.476**
	(.783)	(.828)	(3.070)	(.714)	(.745)	(2.088)	(.818)	(.834)	(2.378)
Logged GDP per Capita	.---	5.481**	-50.582**	.---	7.637**	-26.130**	.---	7.637**	-26.130**
		(.181)	(2.507)		(.123)	(2.568)		(1.399)	(2.792)
Interaction: EFW X GDP per Capita	.---	.---	5.129**	.---	.---	4.417**	.---	.---	4.417**
			(.364)			(.287)			(.325)
Time Fixed Effects	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Correction For Autocorrelation	No	No	No	No	No	No	Newey-West	Newey-West	Newey-West
Sample N	120 (902)	120 (902)	120 (902)	120 (902)	120 (902)	120 (902)	120 (902)	120 (902)	120 (902)


A. 1970s
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Australia
Austria
Belarus
Belgium
Bulgaria
Canada
Czech Rep.
Denmark
England/Wales
Estonia
Estonia
Finland
France
Germany
Hungary
Iceland
Ireland
Italy
Japan
Latvia
Lithuania
Luxembourg
N. Ireland
Netherlands
New Zealand
Norway
Poland
Portugal
Russia
Scotland
Slovak Rep
Sweden
Switzerland
USA


B. 1980s
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Australia
Austria
Belarus
Belgium
Bulgaria
Canada
Czech Rep.
Denmark
England/Wales
Estonia
Finland
France
Germany
Hungary
Iceland
Ireland
Italy
Japan
Latvia
Lithuania
Luxembourg
N. Ireland
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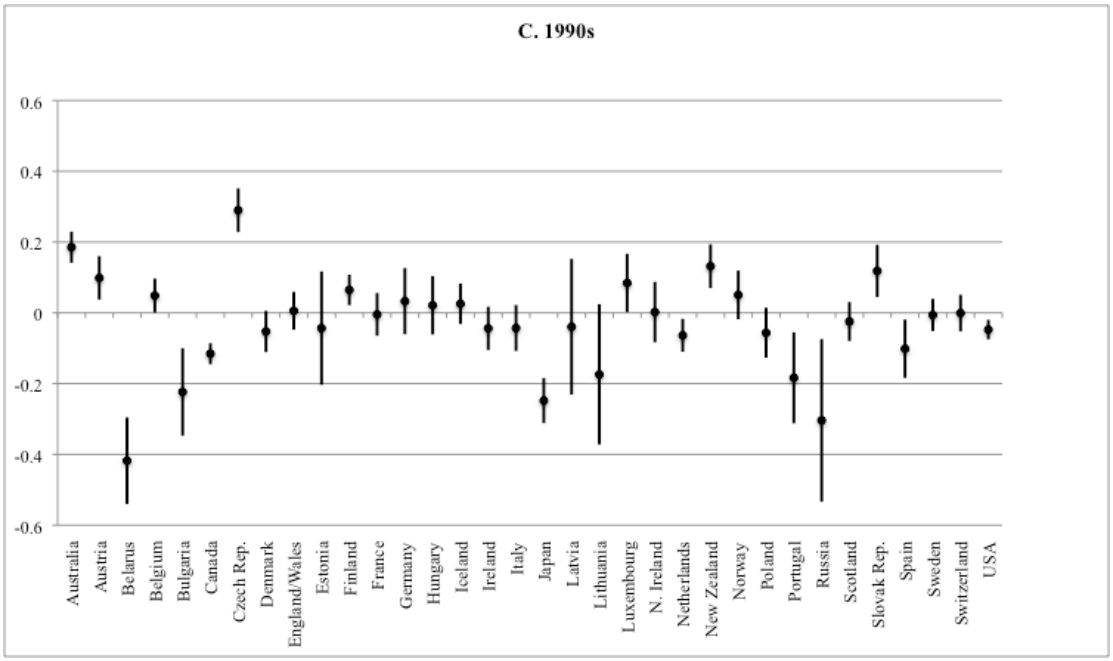
New Zealand
Norway
Poland
Portugal
Russia
Scotland
Slovak Rep.
Spain
Sweden
Switzerland
USA



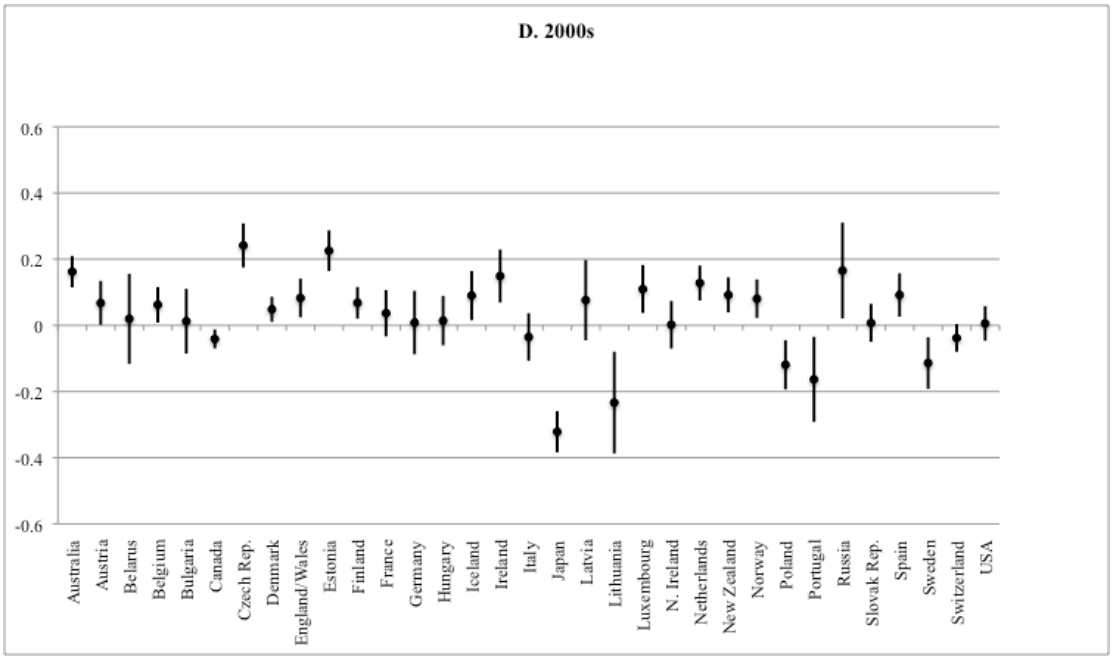
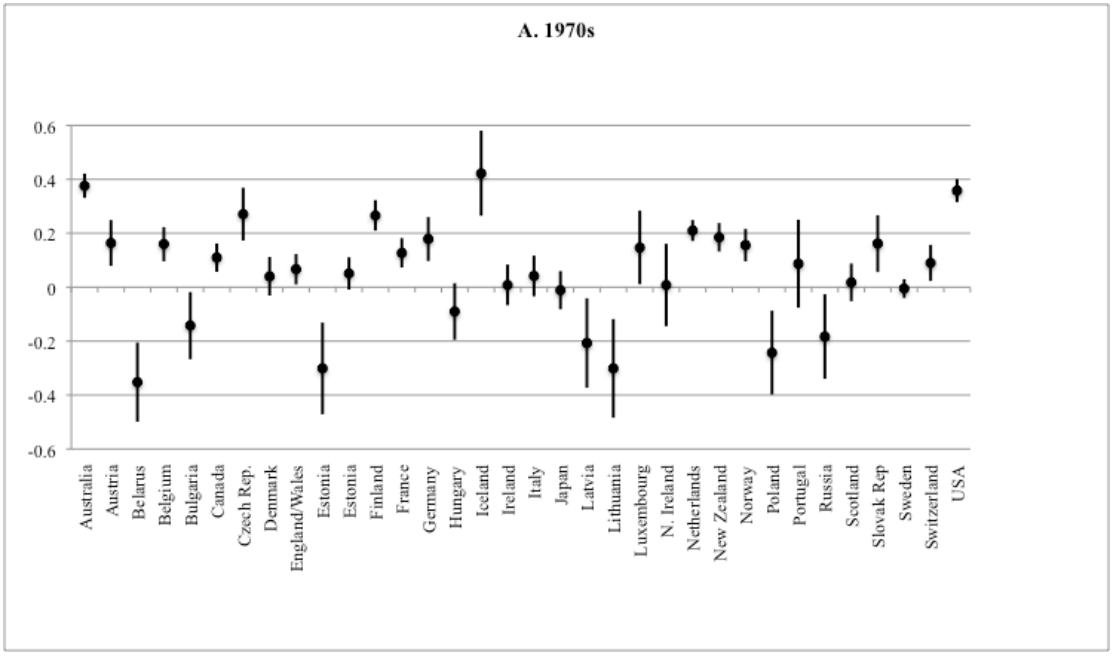


Figure 1. Annual Growth Rates in Female Life Expectancy by Decades, 1970s-2000s, 33 Countries from the Human Mortality Database.


A. 1970s
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Australia
Austria
Belarus
Belgium
Bulgaria
Canada
Czech Rep.
Denmark
England/Wales
Estonia
Estonia
Finland
France
Germany
Hungary
Iceland
Ireland
Italy
Japan
Latvia
Lithuania
Luxembourg
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Netherlands
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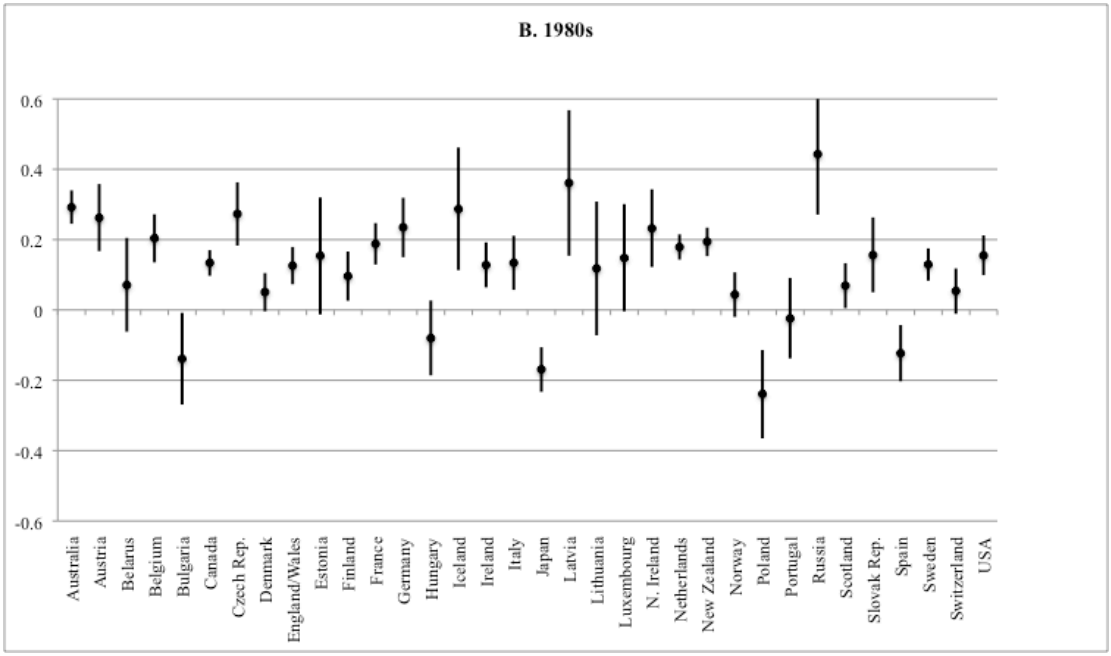
Norway
Poland
Portugal
Russia
Scotland
Slovak Rep
Sweden
Switzerland
USA


B. 1980s
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Australia
Austria
Belarus
Belgium
Bulgaria
Canada
Czech Rep.
Denmark
England/Wales
Estonia
Finland
France
Germany
Hungary
Iceland
Ireland
Italy
Japan
Latvia
Lithuania
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New Zealand
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Poland
Portugal
Russia
Scotland
Slovak Rep.
Spain
Sweden
Switzerland
USA

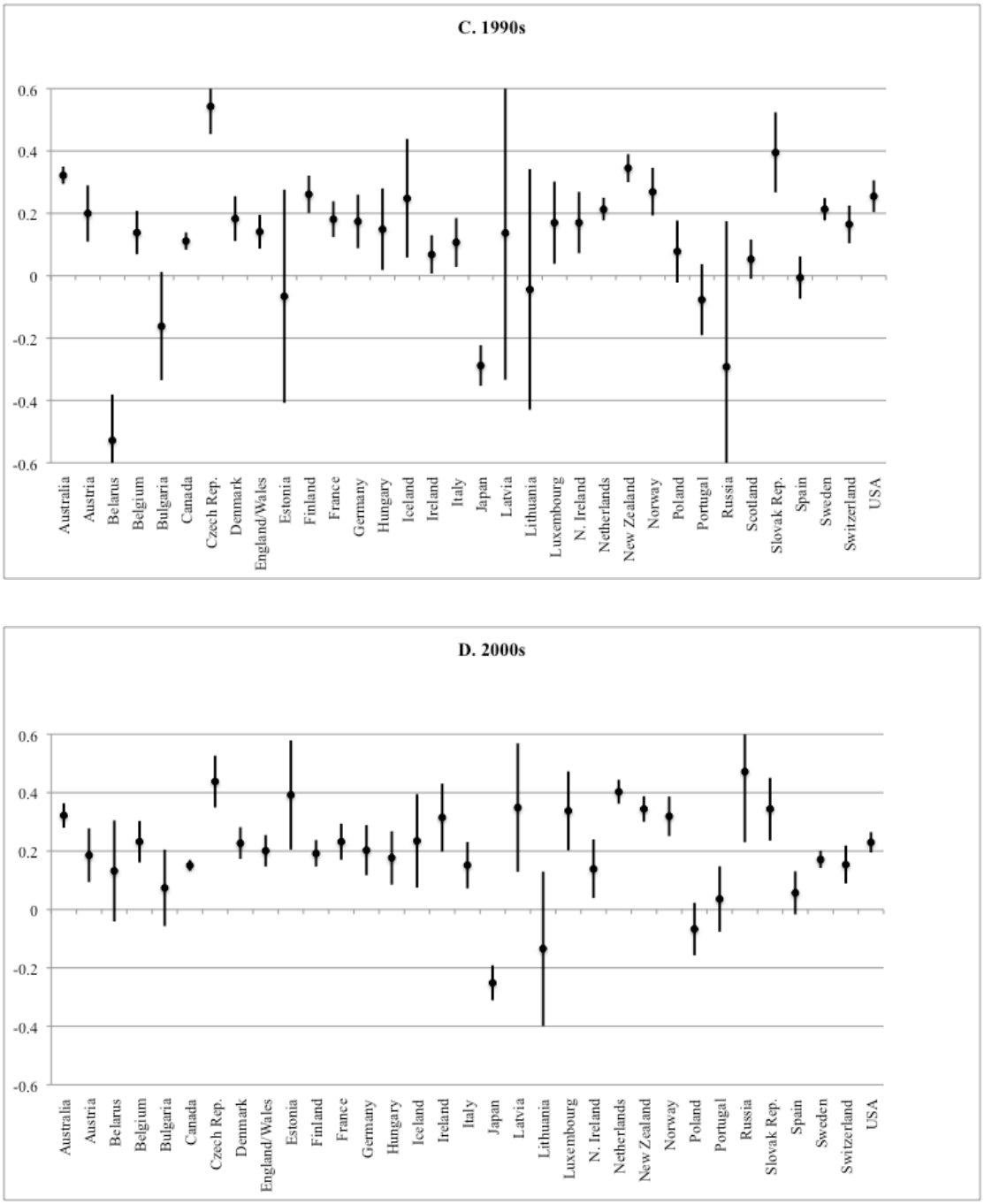

Figure 2. Annual Growth Rates in Male Life Expectancy by Decades, 1970s-2000s, 33 Countries from the Human Mortality Database.

Figure 3. Effect of Neoliberalism on Female Life Expectancy by GDP per capita.

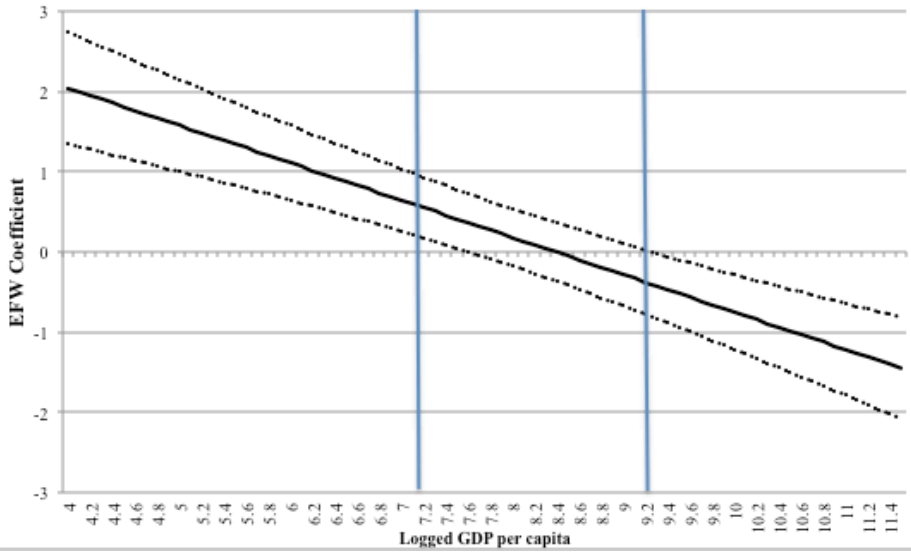

Figure 4. Effect of Neoliberalism on Male Life Expectancy by GDP per capita.

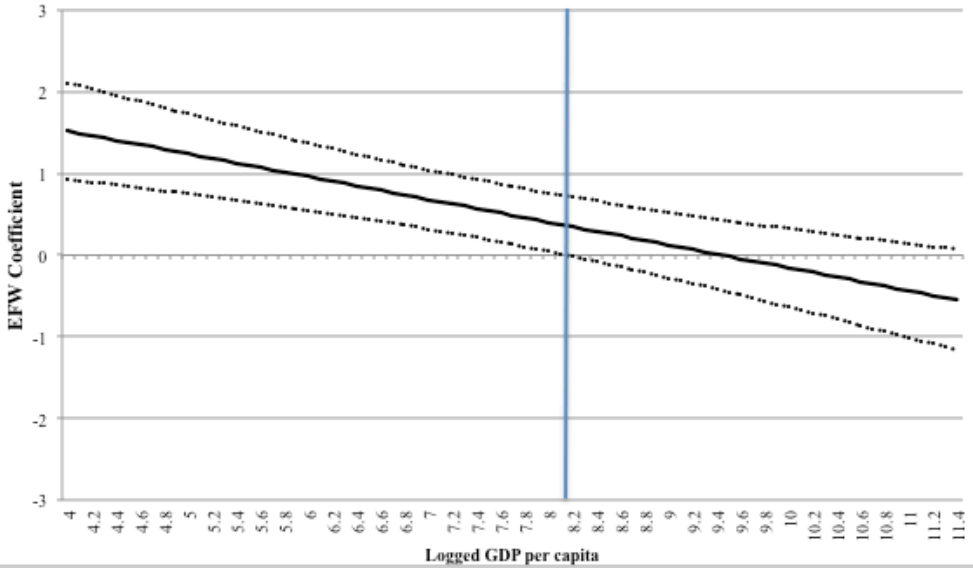

Figure 5. Effects of Neoliberalism on Infant Mortality by GDP per capita.