



## Review of *The Spirit Level*

**The Spirit Level: Why equality is better for everyone**

Richard Wilkinson and Kate Pickett | London: Penguin Books, 2010

### Introduction

*The Spirit Level*, written by British epidemiologists Richard Wilkinson and Kate Pickett, argues that what matters for human well-being is not ongoing increases in average income, but how equally a country's income is shared. Not surprisingly, pundits on the left of the political spectrum have endorsed this book, while pundits on the right of the political spectrum have sought to overthrow its argument.

Although the authors give the impression that their thesis is based solely on the empirical evidence, this is wishful thinking. All arguments for social change are based on more than economic and social data. They are also based on a particular understanding of the human person, a vision for what constitutes a just society, and various hypotheses for realising this vision<sup>1</sup>. It is impossible to make an argument for social change, as the authors contend they do in *The Spirit Level*, simply "on evidence, not moral arguments or anecdotes."<sup>2</sup>

For this reason, this review examines the anthropology and the societal vision that underpins *The Spirit Level* and the policy prescriptions that are presented for realising this vision. After summarising Wilkinson and Pickett's

overall argument in the first section of this review, the second section examines their anthropology and societal vision. This section contends that while the authors are right to uphold a relational socio-political vision, which arises from seeing humans as social beings, their presentation of what constitutes quality human relationship lacks sufficient detail. A degree of ambiguity also plays out in the authors' discussion of egalitarianism and the association of their version of egalitarianism with a just society shows little recognition of alternative notions of justice. It is thus too simplistic.

The authors are adamant that for a country like New Zealand, which has exceeded a per capita GDP of approximately \$US 25 000, the focus should be on achieving a more equal distribution of income. The final section of this review challenges whether this notion should be politicians and policy makers' principal focus. In particular, this review argues that economic growth is actually important for fostering the kind of relational society *The Spirit Level* seems to advocate. In addition, the final section of this review considers some prominent policies that the *The Spirit Level* presents and evaluates whether they would foster a more relational society.

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The views, opinions, conclusions or recommendations expressed in this review are those of the author and do not represent those of the Marketplace Institute or Regent College.



## Understanding *The Spirit Level*

Wilkinson and Pickett argue that once a country's average income has reached about \$US 25 000, further increases will not improve the quality of life. The authors seek to substantiate this claim in the opening chapter by suggesting that higher average income is not associated with higher life expectancy or human happiness.<sup>3</sup> Instead, what matters is how the overall material prosperity of a country is shared within that country: this is the determinative factor in human wellbeing. In other words—using the common analogy of the 'economic pie'—policy makers and politicians should forget about trying to make the pie bigger but rather focus on ensuring the pie servings are more equal, so that all will be satisfied at the national dinner table.

Using two datasets—one comprising 23 developed countries and the other 50 U.S. states—and discussing numerous other studies, Wilkinson and Pickett argue that income inequality matters for a swathe of health and social indicators; from life expectancy, to teenage pregnancy, to violent crime (some comments about the data and methods which Wilkinson and Pickett have used are included in the appendix to this paper). The authors also argue that reducing income inequality will help in the development of an economic system that is more environmentally sustainable.

A large part of the appeal of Wilkinson and Pickett's argument is their contention that everyone will benefit from reduced income inequality, hence the subtitle of their book ("Why Equality is Better for Everyone")<sup>4</sup>. They argue that "the effects of inequality are not confined just to the least well off: instead they affect the vast majority of the population."<sup>5</sup> If the authors are right, this means there are no losers—or at least fewer than is generally suggested—from narrowing the distribution of household after-tax incomes. For example, if households in the top income bracket are required to pay more income tax in order to reduce income inequality, then they will benefit through a reduction in health and social problems, such as mental illness, obesity, and violent crime.

Wilkinson and Pickett are not content to just present some empirical evidence suggesting that income inequality is associated with a range of health and social problems. They go beyond associations and attempt to explain why, for example, higher income inequality in New Zealand compared to Canada and Sweden means that New Zealand has greater health and social problems. The authors contend that income inequality is an indication of the degree of "social stratification" which exists within a society.<sup>6</sup> Countries that have a higher degree of social stratification are likely to be characterised by extreme fragmentation, hierarchy, and minimal interaction between different social groups. The authors also contend that income inequality is more than just an indicator of social stratification. The degree of income inequality also determines the degree of hierarchy that emerges within a society:

*We should perhaps regard the scale of material inequalities as providing the skeleton, or framework, round which class and cultural differences are formed. Over time, crude differences in wealth gradually become overlaid by differences in clothing, aesthetic taste, education, sense of self and all other markers of class identity.<sup>7</sup>*

Wilkinson and Pickett explain that countries which have greater income inequality have relatively more health and social problems, based on the idea that humans in modern societies are responding to the "social evaluative threat."<sup>8</sup> This is the notion that humans are in a continual struggle to maintain their position in the social hierarchy so as not to lose their social status and self-esteem. The authors report research suggesting that dealing with the "social evaluative threat" over prolonged periods of time causes types of stress that have been linked with various health problems. Greater inequality exacerbates these stresses because it "seems to heighten people's social evaluation anxieties by increasing the importance of social status" and manifest in a host of social and health problems, such as obesity, teenage pregnancy, and low social mobility.<sup>9</sup>

### Anthropology and societal vision

Wilkinson and Pickett's view of human behaviour in different environments is at the core of their explanation of why income inequality is determinative for well-being. The authors suggest that human nature has two aspects. On the one hand, humans have a tendency to be involved in a competitive struggle with one another in order to maintain their place in the social hierarchy, thereby staving off the social evaluative threat. On the other hand, humans have a large capacity for "reciprocity, mutuality, sharing, social obligations, cooperation and recognition of each other's needs."<sup>10</sup> Different environments can either foster competitive behaviour (focussed on maintaining social status) or cooperative activity. Moreover, because we humans have the ability to change the institutions and policies that shape our environments—"the humanly devised constraints that shape human interaction"—we can cultivate the kind of societies within which we aspire to live.<sup>11</sup> Because Wilkinson and Pickett see humans as social beings, the quality of our relationships with one another is integral to human well-being. Therefore, they wish to cultivate a society that encourages "mutual interdependence and co-operation, in which each person's security depends on the quality of their relationships with others and [where] a sense of self-worth comes less from status than from the contribution made to the wellbeing of others."<sup>12</sup>

At this general level, I agree with the two points being made by Wilkinson and Pickett. First, central to human well-being is the quality of our relationships with others. We flourish as humans when we experience quality relationships with family, friends, work colleagues, etc. Second, our environments are not fixed and, therefore, we can shape institutions and policies that aim to cultivate a more "relational society," a society that is marked by the quality of its human relationships.

But this does raise the question: What do we mean by quality human relationships? Regrettably, the

authors do not define and develop notions of "quality human relationships" or "mutual interdependence and cooperation" to a sufficient level of detail to be able to discuss this in a concrete fashion. This makes it difficult to assess whether some of the specific proposals discussed throughout *The Spirit Level* would move a society towards Wilkinson and Pickett's social vision. More promising for readers wanting to see a more developed relational vision would be that offered by Schluter and Lee in *The R Factor*.<sup>13</sup> These authors develop a relationship model, which includes features such as continuity (people being in regular, sustained contact) and multiplexity (people meeting in a variety of settings), to advance particular policies.

A lack of detail and a degree of ambiguity also plagues Wilkinson and Pickett's discussion of egalitarianism. Wilkinson and Pickett believe that a more egalitarian society will lead to a more relational society, one that is characterised by interdependence, cooperation, mutuality and friendship. Readers of *The Spirit Level* will notice the frequent references to egalitarianism and the connection the authors make between this and reducing income inequality. Likewise, various statements and allusions are made connecting "equality" with "fairness." For example, Wilkinson and Pickett write of "the very basic principles of fairness and equality which we still regard as good manners in any normal social interaction."<sup>14</sup>

But what type of egalitarianism are Wilkinson and Pickett talking about? Is it equality of original positions (endowments), rights before the law, opportunity, outcomes, income, or some combination of all of these? Is some degree of income or wealth inequality permissible?<sup>15</sup> The reader is left to piece together Wilkinson and Pickett's understanding of egalitarianism using various phrases scattered throughout the book (e.g., "equality does not mean being the same" or that equality does not mean that incomes should be perfectly equalised).<sup>16</sup>

To illustrate why it is important to have greater specificity around the authors' idea of egalitarianism consider the following. While Wilkinson and Pickett certainly argue that countries like the US, Portugal, Australia and New Zealand should aim to achieve a more equal distribution of income, what do they think about countries where the income distribution is relatively more equal, like Sweden, Norway, Finland and Japan? Do Wilkinson and Pickett believe that further reductions in income inequality would make these countries more relational, reduce health and social problems, and improve human well-being? Would perfect income equality lead to the most relational society and the highest level of human well-being? It is not clear from *The Spirit Level* how the authors would respond to questions like these.

I suspect that a version of John Rawls's theory of justice lies behind *The Spirit Level's* version of egalitarianism, although Wilkinson and Pickett do not cite Rawls.<sup>17</sup> Rawls suggests that economic and other resources should be shared equally within a society, with the exception that economic and social inequalities should be allowed to exist when they favour the most disadvantaged.<sup>18</sup> Wilkinson and Pickett suggest that a similar conception of justice is "common intuition," and indeed there is some evidence that people support aspects of the Rawlsian notion of justice.<sup>19</sup> It is, however, also true that people conceive of other forms of justice. For example, some say that if someone has acquired more education, has more skill and talent, and works harder, then she should be rewarded accordingly (as some "dessert" theories of justice propose, such as that advocated by Nozick).<sup>20</sup>

Discussion about different notions of justice cannot be side-stepped. What constitutes a just society has been debated since time immemorial, and we must continue to engage in public discourse on this issue. Therefore, while I generally affirm Wilkinson and Pickett's desire to foster a more relational society, the ambiguity that surrounds their notion of egalitarianism and the way

they simply equate an egalitarian society with a just society is problematic.

### Will their proposals foster a more relational society?

Although certain aspects of Wilkinson and Pickett's societal vision are ambiguous or lack detail, the authors are clear that the principal issue for determining human well-being, once a certain level of average income is reached, is how a nation's income is distributed. Are the authors on firm ground in making this argument? Will focussing solely on reducing income inequality lead to a more relational society for a nation like New Zealand?

In the appendix to this review, I have documented my concerns about some of the empirical analysis underpinning *The Spirit Level*. My overall conclusions are twofold:

- i) More work needs to be done to test the robustness of Wilkinson and Pickett's results within a framework that is able to analyse multiple factors simultaneously, not just income inequality, in examining health and social problems; and
- ii) Wilkinson and Pickett overstate the extent to which income inequality matters.

This is not to say that income inequality does not matter for fostering a relational society. I think it does. For example, if income differences in a country become too large, there may be less interaction between those on high incomes and those on low incomes thereby reducing the degree of relational connectedness within a society. Gated communities, pockets of urban poverty, envy of the well off, derision of those in poverty, and status consumption are manifestations of the fragmentation that can result when incomes become grossly unequal. But I also think other factors are important in addition to income inequality. In fact, the authors' own empirical analysis suggests that countries' health and social problems are influenced by more than

just income inequality.<sup>21</sup> In particular, the authors dismiss too quickly how economic growth (further increases in average income levels) might reduce social and health problems, and help to foster the kind of "relational" society *The Spirit Level* seems to advocate.<sup>22</sup>

Just as the authors argue that income inequality 'intuitively' matters for health and social problems, I would argue that, for a country like New Zealand, the average level of income also matters. New Zealand's GDP per capita is approximately 25 percent lower than Australia's.<sup>23</sup> Imagine the following: New Zealand was gifted additional income so that per capita income increased to the same level as Australia's per capita income. Do we think that if New Zealand's per capita income was the same as Australia's it would make a difference to New Zealand's health and social problems? It could. Given the current tax structure, it would mean that successive governments would have greater resources to devote to health and social problems because they could collect more money in taxation without having to increase taxes. Although for the government to make a difference, the money raised in taxation would have to be spent in ways that would enhance well-being.

Increasing New Zealand's per capita income to the equivalent of Australia's would also mean that people would have more disposable income to support extended family and friends in need and to support organisations in their local communities. If families have more disposable income, some households could work fewer hours. This change could help to reduce stress levels and allow people more time for family, friends and civic involvement. Reducing income inequality is but one (limited) way of allowing a more relational society to flourish.

Of course, the world is more complex than what this "thought experiment" suggests. If history is anything to go by, it is unlikely that every household would share proportionally in rising average income levels. But the point being made is that reducing health and social problems and fostering a more relational society is likely

to be dependent upon the average level of income, not simply distribution. Therefore, I cannot agree with the authors that "further improvements in the quality of life no longer depend on further economic growth: the issue is now community and how we relate to each other" as if both of these—economic growth and cultivating community—are unrelated.<sup>24</sup>

What concerns me is that someone seizing on Wilkinson and Pickett's thesis that all that matters is reducing income inequality, might actually counter their desire to foster a relational society, depending on the type of policies that are enacted. Undertaking large-scale redistribution through the tax and transfer system would increase deadweight losses for the economy. This could have an adverse impact on a nation's income and employment levels because it distorts incentives to work, invest and innovate. Unemployment could rise which would be to the detriment of creating a relational society because, as Wilkinson and Pickett themselves point out, "for most of the employed population it is at work that they interact most closely with people other than family and have the potential to feel part of a community."<sup>25</sup> For this reason, I remain unconvinced that large scale redistribution through the tax and transfer system would foster the type of relational society Wilkinson and Pickett seem to desire.

In the context of engaging with *The Spirit Level*, Gleisner rightly suggests that attention should also be given to identifying factors that contribute to long-term household poverty and seeking to develop policies that address these factors.<sup>26</sup> Gleisner suggests a number of areas for fruitful investigation, including persistent income deprivation, education, and lack of social mobility. Focussing on the amelioration of poverty is likely to be an effective approach in fostering a more relational society because it could help those who are least well off to participate more in a nation's economic and social life.

To be fair, Wilkinson and Pickett themselves display some degree of hesitancy about using the tax

and transfer system to foster a society that embodies their social vision. They note that policies need to be found that ensure that "greater equality is more deeply rooted in the fabric of our societies and less vulnerable to the whim of successive governments."<sup>27</sup> Therefore, in addition to discussing the option of using the tax and transfer system, Wilkinson and Pickett also note that income inequality can be alleviated by reducing differences in market incomes (that is, income before taxes and transfers).<sup>28</sup>

Some of the policies that Wilkinson and Pickett suggest to reduce differences in market incomes are less likely to foster the type of relational society they desire. For example, raising the minimum wage in a bid to increase the market incomes of lower-paid workers is likely to increase unemployment among these same workers, with the net effect of increasing income inequality. A more fruitful approach is the authors' suggestion that policies be enacted that encourage greater employee ownership and participation in the businesses where they work. This would foster greater "relationality" through strengthening social networks at work and by encouraging households to stay rooted in their local communities, since they would have a greater stake in the businesses where they work.<sup>29</sup>

### Summary and conclusion

To summarise, Wilkinson and Pickett envision a "relational" society that should command widespread support. However, this vision remains at a generic level and the authors' discussion of egalitarianism and justice is cursory, and at times opaque, making it difficult to picture what this would look like at a more detailed level and how it would be embodied within a nation's institutional framework. Nonetheless, *The Spirit Level*

does raise important questions for a nation like New Zealand, even though they are not fully answered by Wilkinson and Pickett. What kind of society do New Zealanders want to live in? And what institutional structures and policies need to be enacted to realise this society? To answer these questions, we cannot escape the hard work of discussing what a "just" society actually is; debating the relative weight we give to different aspects of what it means to be "just."

The authors are clear that for a country like New Zealand, politicians and policy-makers should focus on reducing income inequality. While agreeing that income inequality matters for fostering a relational society, it seems naïve to ignore other factors. In particular, this review has argued that attention also needs to be given to increasing average income. In contrast to the position proffered by Wilkinson and Pickett, economic growth is an important ingredient in improving human well-being and the quality of "community and how we relate to each other."<sup>30</sup> In addition, this review also questions whether some of the policies that Wilkinson and Pickett outline would create the type of relational society they seem to envision. For example, large-scale redistribution through the tax and transfer system may have other unintended negative consequences. Pursuing institutional arrangements and policies that seek to weave Wilkinson and Pickett's "relational" vision into the very fabric of New Zealand society is more promising (e.g. by building companies that encourage social networks and households to stay rooted in their local communities). This requires a common relational vision, in which all New Zealanders share, and a willingness to cultivate institutions that embody this relational vision at all levels of society, including government, civil society, community, and family.

## ENDNOTES

- 1 Similar points are made by D. Bromell, "Does Inequality Matter? Some Concluding Reflections." (presented at "Does Inequality Matter? A Policy Forum," Institute of Policy Studies, Wellington, New Zealand, November 2010), [http://ips.ac.nz/events/previous\\_events-2010.html](http://ips.ac.nz/events/previous_events-2010.html) (accessed December 2010).
- 2 R. Wilkinson and K. Pickett, "Professors Richard Wilkinson and Kate Pickett, authors of *The Spirit Level*, reply to critics," (Equality Trust, July 2010), 1, <http://www.equalitytrust.org.uk/resources/response-to-questions> (accessed December 2010). Some of their detractors also seem to share this paradigm. "Policy makers need to be aware of the fact that *The Spirit Level* is not a reliable book based on objective science." N. Sanandaji, A. Malm and T. Sanandaji, "The Spirit Illusion: A critical analysis of how '*The Spirit Level*' compares countries," 27, <http://www.taxpayersalliance.com/economics/2010/07/new-research-the-spirit-illusion.html> (accessed December 2010).
- 3 The authors acknowledge the situation is different for under-developed countries.
- 4 Bromell notes that the subtitle of *The Spirit Level* has changed over successive editions from "why more equal societies almost always do better" to "why greater quality makes societies stronger" to "why equality is better for everyone." See D. Bromell, "Income inequality and the economy of ideas," *Policy Quarterly* 6, no. 3 (August 2010): Footnote 3, 44. This suggests that Wilkinson and Pickett have become more confident in their contention that reducing income inequality will be beneficial for societies.
- 5 R. Wilkinson and K. Pickett, *The Spirit Level: Why Equality is Better for Everyone* (London: Penguin, 2010), 176.
- 6 *Ibid.*, 27.
- 7 *Ibid.*, 28.
- 8 *Ibid.*, 37.
- 9 *Ibid.*, 43.
- 10 *Ibid.*, 200.
- 11 D.C. North, *Institutions, Institutional Change and Economic Performance* (Cambridge: Cambridge University Press, 1990), 3.
- 12 R. Wilkinson and K. Pickett, *The Spirit Level*, 210.
- 13 M. Schluter and D. Lee, *The R Factor* (London: Hodder and Stoughton, 1993).
- 14 R. Wilkinson and K. Pickett, *The Spirit Level*, 270.
- 15 In fact, nowhere do the authors define what they mean by income. Is it just salary and wages, or does it also include household and business income? Is an adjustment made for the number of people in the household or the composition of the household (using equivalence scales)?
- 16 R. Wilkinson and K. Pickett, *The Spirit Level*, 237, 259.
- 17 J. Rawls, *A Theory of Justice* (Cambridge, MA: Belknap Press of Harvard University Press, 1999).
- 18 This follows from Rawls' so called "difference principle," the idea that in some situations economic and social inequalities should be permitted because they favour the least advantaged compared to a situation where there is an equal distribution of resources.
- 19 See J. Konow, "Which Is the Fairest One of All? A positive analysis of justice theories," *Journal of Economic Literature* 41, no.4 (2003): 1188-1239. In particular, Konow notes that Rawls' stress on favouring those in need "resonate[s] with popular values," 1198.
- 20 R. Nozick, *Anarchy, State, and Utopia* (Basic Books, 1977). Bromell has pointed out to this author that there are additional complexities when considering inter-generational economic inequality. For example, he suggests "intuitions about equality conflict with our intuitions about liberty" (e.g., the liberty to look after our progeny in order to give them a better life than we had).
- 21 Their basic statistical model of health and social problems and income inequality suggests around 25 percent of the variation across countries is unexplained.
- 22 Wilkinson and Pickett's conclusion that average income levels are not related to their index of health and social problems is dependent on whether the US is included in their regression analysis. The US looks like an outlier in Figure 2.3 of *The Spirit Level*. When the US is excluded from their data set, the relationship between average income (measured by GDP per capita) and their index of health and social problems is significant at the 5 percent significance level. Saunders' analysis also suggests that the degree of trust is dependent upon the level of GDP across countries, as is life expectancy across U.S. states. P. Saunders, "Beware False Prophets: Equality, the good society and *The Spirit Level*" (Policy Exchange, July 2010), <http://www.policyexchange.org.uk/publications/publication.cgi?id=195> (accessed December 2010). Although looking at subjective measures of well-being, Stevenson and Wolfers also find a positive relationship between GDP per capita and subjective levels of well-being. B. Stevenson and J. Wolfers, "Economic Growth and Subjective Well-Being: Reassessing the Easterlin paradox," *Brookings Papers on Economic Activity* 2008, no.1 (2008): 1-87.
- 23 This is based on OECD data for 2009 using \$US purchasing power parity.
- 24 R. Wilkinson and K. Pickett, *The Spirit Level*, 254.
- 25 *Ibid.*, 259.
- 26 B. Gleisner, "Trends in income inequality and other socio-economic outcomes" (presented at "Does Inequality Matter? A Policy Forum," Institute of Policy Studies, Wellington, New Zealand, November 2010), [http://ips.ac.nz/events/previous\\_events-2010.html](http://ips.ac.nz/events/previous_events-2010.html) (accessed December 2010).
- 27 R. Wilkinson and K. Pickett, *The Spirit Level*, 254-255.
- 28 *Ibid.*, 184.
- 29 See J. Rushworth and M. Schluter, *The Relational Company: Exploring a new business vehicle* (Relationships Foundation, June 2008). These authors develop the idea of a "relational" company and how it would bring economic and social benefits to local communities.
- 30 R. Wilkinson and K. Pickett, *The Spirit Level*, 254.

## APPENDIX: *THE SPIRIT LEVEL*: COMMENTS ON THE EMPIRICAL ANALYSIS

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The following is a brief discussion of the empirical analysis that forms the basis for *The Spirit Level*.

### Presentation of analysis:

While appreciating that *The Spirit Level* (hereafter TSL) was written for an educated general audience, the presentation of some results and the lack of accompanying data and statistical information, which could have been provided in an appendix, inhibit those who have the requisite skills to assess the robustness of the analysis and increase their understanding of the results.

- Little information is provided on the data used in the statistical analysis. Basic definitions and a brief discussion of the data would have answered questions such as the following: What is the definition of income used in the quintile measure of inequality? Is it simply salary and wages, or does it also include investment and business income? Have equivalence scales been used to adjust for household composition? Have any adjustments been made for differences in "purchasing power" between countries?
- For each of the figures that present the association between income inequality and some measure of health or social problem, the inequality measure is presented on a low-high spectrum, rather than a quantitative scale. This makes it difficult to get a sense of the magnitude of the association between income inequality and the measure of health or social problem (hereafter, outcome variable). For example, lowering the ratio of the top household quintile to the bottom quintile from 10 to 5 is associated with an increase in life expectancy of how many years?
- In the *Note on Graphs*, the authors explain how, for some of the charts, they fit "a regression line, that shows the 'best fit' relationship between income inequality and the outcome of that graph."<sup>1</sup> In addition, the reader is also told "we have only included a best fit line through the points if the relationship would be very unlikely to occur by chance."<sup>2</sup> Unfortunately, the authors do not explain their threshold (using the jargon: "the significance level") for determining when such an occurrence is "by chance." I suspect that the significance level has been set at 5 percent, but I cannot be sure.
- The authors should have reported the estimates for  $b_1$  and  $b_2$ , the associated standard errors (or p-values), the  $R^2$ , and the significance levels for rejecting the null hypotheses that  $b_1 = 0$  and  $b_2 = 0$  for the following linear model:<sup>3</sup>

$$y = b_1 + b_2x + e$$

where  $y$  is the outcome variable,  $b_1$  and  $b_2$  are the autonomous level of the outcome variable and the relationship between the outcome variable and income inequality, respectively,  $x$  is the measure of inequality, and  $e$  is a stochastic error term (with the standard distributional assumptions).

- Having this information would allow the reader to: gain a sense of the "average" magnitude of the association between income inequality and the outcome variable; assess whether the relationship is statistically significant; and assess how well this simple model "explains" the variation in the data (more on this below).<sup>4</sup>
- Using the data that is available on the Equality Trust website (<http://www.equalitytrust.org.uk/>), I have re-estimated Wilkinson and Pickett's basic regression models for the index of health and social problems, trust, life expectancy, infant mortality, obesity, mental illness, education scores, teenage birth rates, homicides, imprisonment, and social mobility and provided a fuller set of results at the end of this appendix. Note that some of estimates are based on a small number of observations (e.g., mental illness = 12; social mobility = 8); not a strong basis for drawing conclusions about the relationship between variables.



### Robustness of linear associations between income inequality and outcome variables:

Ideally more work should be done to test the robustness of the linear association between income inequality and various outcome variables, and also between outcome variables and other factors, such as national income per head. A couple of reviews have already done some of this work, pointing out that the authors' results are sensitive to the countries that are included in the sample, outliers, alternative measures of inequality, etc. For example, Sanandaji, Malm and Sanandaji point out that health and social problems are sensitive to the measure of income inequality and the sample of countries that are included in the analysis.<sup>5</sup> The lack of an association between Wilkinson and Pickett's index of health and social problems and national income per head is sensitive to whether or not the U.S. is included (see Figure 2.3).<sup>6</sup> When I estimate the simple linear relationship between the index of health and social problems and GDP per head excluding the U.S. I find a negative and statistically significant relationship (at the 5 percent significance level—see the results below). In other words, when the U.S. is excluded, I find that higher GDP per head is associated with less health and social problems.

Source	SS	df	MS	Number of orbs	=	20
Model	1.18866065	1	1.18866065	F (1, 18)	=	4.81
Residual	4.4439942	18	.246888567	Prob > F	=	0.0416
Total	5.63265485	19	.296455518	R-squared	=	0.2110
				Adj R-squared	=	0.1672
				Root MSE	=	.49688

  

Indexofhea-s	Coef.	Std. Err.	t	P>  t	[95% Conf. Interval]	
gdpperhead	-.0000392	.0000178	-2.19	0.042	-.0000767	-1.66e-06
_cons	1.277237	.6389968	2.00	0.061	-.0652455	2.61972

### Employing a more sophisticated multivariate framework:

Throughout TSL, the authors adopt a bivariate regression framework to examine the relationship between the outcome variable (e.g., life expectancy) and income inequality (as outlined above). They consistently use these bivariate relationships to argue for a relationship between the outcome variable and inequality. In other words, the authors seem to assume that the outcome variable is only related to inequality. A more sophisticated multivariate regression framework might assume the outcome variable is related to a number of other variables as follows:

$$y = b_1 + b_2x + b_3y + b_3z + \dots + e$$

where  $y$  is the outcome variable,  $b_1$  measures the autonomous level of the outcome variable,  $b_2$  the relationship between the outcome variable and income inequality,  $b_3$  the relationship between the outcome variable and another variable that is associated with it (and so on), and  $e$  is a stochastic error term (with the standard distributional assumptions). For example, someone might consider that life expectancy is related not only to income inequality, but also to income, the percentage of GDP spent on health expenditures, etc.

- It is a matter for empirical testing whether the outcome variable is associated with more than just income inequality. The results the authors report in a table on pages 310–311 do however provide prima facie evidence that the various outcome variables are associated with more than just income equality. Consider the results the authors report for their index of health and social problems. The Pearson correlation

coefficient that the authors report for this index is 0.87. This means that 76 percent of the variation in the index of health and social problems is "explained" by income inequality. Looking at this from the opposite angle, 24 percent of the variation across countries is "unexplained." This variation, which is not accounted for, is owing to other factors (e.g., income or the percentage of GDP spent on health expenditure). Note also that the statistical model for the index of health and social problems is better at "explaining" the variation across countries than a large majority of their other models. For example, income inequality "explains" only 19 percent of the variation in life expectancy across countries.

- Analysing outcome variables in a multivariate regression framework might show that: other factors are statistically associated with health and social problems; and, the inclusion of additional factors might alter the magnitude of the relationship with inequality and in some situations might even render the association statistically insignificant (because of omitted variable bias). Ultimately, this is a matter for empirical testing.
- This framework is also capable of dealing with additional levels of sophistication. For example, statistical models can be estimated that exploit not only cross-sectional variation (that is, the variation across countries and states), but also the variation through time. Advanced panel data estimation techniques can also take care of the "idiosyncratic" features of different countries.

### Overall Assessment:

- More work needs to be done to test the relationship between health and social problems and income inequality in a multivariate framework that takes adequate account of data properties.
- Based on the above discussion, Wilkinson and Pickett have probably over-stated the extent to which income inequality contributes to a country's health and social problems.

### Results for bivariate regression models:

#### *Index of health and social problems*

Source	SS	df	MS	Number of orbs	=	21
				F (1,19)	=	61.22
Model	7.57582336	1	7.57582336	Prob > F	=	0.0000
Residual	2.35135737	19	.123755651	R-squared	=	0.7631
				Adj R-squared	=	0.7507
Total	9.92718073	20	.496359037	Root MSE	=	.35179

  

Indexofhea-s	Coef.	Std. Err.	t	P>  t	[95% Conf. Interval]	
incomeineq~y	.4367823	.0558255	7.82	0.000	.3199382	.5536265
_cons	-2.458138	.3231237	-7.61	0.000	-3.134443	-1.781832

*Life expectancy*

Source	SS	df	MS	Number of orbs	=	23
				F (1, 21)	=	5.00
Model	5.59539815	1	5.59539815	Prob > F	=	0.0363
Residual	23.4889589	21	1.11852185	R-squared	=	0.1924
				Adj R-squared	=	0.1539
Total	29.0843571	22	1.32201623	Root MSE	=	1.0576

  

lifeexpect-y	Coef.	Std. Err.	t	P>  t	[95% Conf. Interval]	
incomeineq-y	-.3147367	.1407195	-2.24	0.036	-.6073788	-.0220946
_cons	80.3673	.8522348	94.30	0.000	78.59498	82.13962

*Infant mortality*

Source	SS	df	MS	Number of orbs	=	23
				F (1, 21)	=	4.53
Model	3.91090093	1	3.91090093	Prob > F	=	0.0454
Residual	18.1421428	21	.863911564	R-squared	=	0.1773
				Adj R-squared	=	0.1382
Total	22.0530438	22	1.00241108	Root MSE	=	.92947

  

infantmort-y	Coef.	Std. Err.	t	P>  t	[95% Conf. Interval]	
incomeineq-y	.26313	.1236706	2.13	0.045	.0059428	.5203171
_cons	3.243298	.7489825	4.33	0.000	1.685704	4.800893

*Obesity*

Source	SS	df	MS	Number of orbs	=	21
				F (1, 19)	=	9.08
Model	286.381549	1	286.381549	Prob > F	=	0.0071
Residual	599.100846	19	31.5316235	R-squared	=	0.3234
				Adj R-squared	=	0.2878
Total	885.482395	20	44.2741197	Root MSE	=	5.6153

  

obesity	Coef.	Std. Err.	t	P>  t	[95% Conf. Interval]	
incomeineq-y	2.685485	.8910936	3.01	0.007	.8204043	4.550565
_cons	.3202299	5.15774	0.06	0.951	-10.47504	11.1155

*Mental Illness*

Source	SS	df	MS	Number of orbs	=	12
				F (1, 10)	=	11.62
Model	254.055289	1	254.055289	Prob > F	=	0.0067
Residual	218.691371	10	21.8691371	R-squared	=	0.5374
				Adj R-squared	=	0.4911
Total	472.74666	11	42.9769691	Root MSE	=	4.6764

  

mentalilln-s	Coef.	Std. Err.	t	P>  t	[95% Conf. Interval]	
incomeineq-y	3.541317	1.039002	3.41	0.007	1.226276	5.856359
_cons	-4.95226	6.331974	-0.78	0.452	-19.06078	9.156256

*Education score*

Source	SS	df	MS	Number of orbs	=	21
				F (1, 19)	=	4.80
Model	2533.79864	1	2533.79864	Prob > F	=	0.0412
Residual	10039.6537	19	528.402828	R-squared	=	0.2015
				Adj R-squared	=	0.1595
Total	12573.4524	20	628.672619	Root MSE	=	22.987

  

mathsandli-s	Coef.	Std. Err.	t	P>  t	[95% Conf. Interval]	
incomeineq-y	-8.097002	3.697607	-2.19	0.041	-15.83618	-.3578214
_cons	546.755	21.31921	25.65	0.000	502.1334	591.3766

*Teenage birth rate*

Source	SS	df	MS	Number of orbs	=	21
				F (1, 19)	=	21.44
Model	1360.47889	1	1360.47889	Prob > F	=	0.0002
Residual	1205.6905	19	63.4573948	R-squared	=	0.5302
				Adj R-squared	=	0.5054
Total	2566.16939	20	128.308469	Root MSE	=	7.966

  

teenagebir-s	Coef.	Std. Err.	t	P>  t	[95% Conf. Interval]	
incomeineq-y	5.853236	1.264129	4.63	0.000	3.207385	8.499088
_cons	-17.84722	7.316905	-2.44	0.025	-33.16168	-2.532762

*Homicides*

Source	SS	df	MS	Number of orbs	=	23
				F (1, 21)	=	5.83
Model	696.005782	1	696.005782	Prob > F	=	0.0250
Residual	2508.8907	21	119.470985	R-squared	=	0.2172
				Adj R-squared	=	0.1799
Total	3204.89648	22	145.677113	Root MSE	=	10.93

  

homicides	Coef.	Std. Err.	t	P>  t	[95% Conf. Interval]	
incomeineq-y	3.510252	1.454331	2.41	0.025	.4858063	6.534698
_cons	-2.578454	8.807816	-0.29	0.773	-20.89531	15.7384

*Imprisonment*

Source	SS	df	MS	Number of orbs	=	23
				F (1, 21)	=	26.92
Model	4.97684192	1	4.97684192	Prob > F	=	0.0000
Residual	3.88225391	21	.184869234	R-squared	=	0.5618
				Adj R-squared	=	0.5409
Total	8.85909584	22	.402686174	Root MSE	=	.42996

  

imprisonme-g	Coef.	Std. Err.	t	P>  t	[95% Conf. Interval]	
incomeineq-y	.2968307	.057209	5.19	0.000	.1778581	.4158033
_cons	2.803106	.346473	8.09	0.000	2.082576	3.523636

*Social mobility*

Source	SS	df	MS	Number of orbs	=	8
				F (1, 6)	=	34.75
Model	.02353605	1	.02353605	Prob > F	=	0.0011
Residual	.00406395	6	.000677325	R-squared	=	0.8528
				Adj R-squared	=	0.8282
Total	.0276	7	.003942857	Root MSE	=	.02603

  

socialmobi-y	Coef.	Std. Err.	t	P>  t	[95% Conf. Interval]	
incomeineq-y	.0330099	.0055998	5.89	0.001	.0193076	.0467122
_cons	.0051714	.0310527	0.17	0.873	-.0708119	.0811547

## ENDNOTES

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- <sup>1</sup> R. Wilkinson and K. Pickett, *The Spirit Level: Why equality is better for everyone* (London: Penguin, 2010), xv.
- <sup>2</sup> Ibid.
- <sup>3</sup> This is the regression model or "line of best fit" that the authors use throughout *The Spirit Level*.
- <sup>4</sup> Some, but not all, of this can be calculated using the information provided in the table on pages 310-311. Nonetheless it would have been more straightforward if the authors had simply provided all of this information in an appendix.
- <sup>5</sup> N. Sanandaji, A. Malm, and T. Sanandaji, "The Spirit Illusion: A critical analysis of how 'The Spirit Level' compares countries" (The TaxPayers' Alliance, July 2010), <http://www.taxpayersalliance.com/economics/2010/07/new-research-the-spirit-illusion.html> (accessed December 2010). Unfortunately, they also use a bivariate framework to examine the association between outcome variables and income inequality. Saunders, on the other hand, attempts to examine associations in a multivariate framework, P. Saunders, "Beware False Prophets: Equality, the good society and The Spirit Level" (Policy Exchange, July 2010), <http://www.policyexchange.org.uk/publications/publication.cgi?id=195> (accessed December 2010).
- <sup>6</sup> R. Wilkinson and K. Pickett, *The Spirit Level*, 21.

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