

# Are Anarcho-Capitalists Insane? Medieval Icelandic Conflict Institutions in Comparative Perspective

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## Abstract

Anarcho-capitalists argue that private governance institutions could profitably replace government and often appeal to medieval Iceland, which was governed privately. Conventional wisdom regards this as insane: medieval Iceland was poor, and every rich society has government. While that is true, every society in medieval Europe was poor by modern standards, and whether living standards would have been higher in medieval Iceland under government is an empirical question that has not been evaluated empirically. We provide such an evaluation by exploiting the fact that, in contrast to Iceland, other territories in medieval Europe were governed partly by government. We use historical data on human height, wages, and population growth to compare living standards across medieval European territories. Living standards in state-governed medieval Europe do not seem to have been higher than they were in Iceland. Anarcho-capitalists, it seems, are not insane.

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# 1 Introduction

Medieval Iceland is a special arrow in the anarcho-capitalist quiver, and for good reason. Its institutions for governing conflict “might almost have been invented by a mad economist to test the lengths to which market systems could supplant government in its most fundamental functions” (Friedman 1979: 400).<sup>1</sup> David Friedman introduced medieval Iceland to the economics literature in 1979. For decades, it was one of just two privately governed societies documented in that literature, with the result that it was one of just two real-world examples that anarcho-capitalists could point to as evidence that they might not be insane.<sup>2</sup> The economics literature on privately governed societies has grown substantially in last the 40 years (see, for instance, Benson 1988, 1989, 1991, 2005; Ellickson 1991; Leeson 2007a, 2007b, 2009, 2013; Powell and Stringham 2009; Benson and Siddiqui 2014; Skarbek 2014; Murtazashvili and Murtazashvili 2015; Piano 2017; Richman 2017; Friedman, Leeson, and Skarbek 2019). Still, for many who argue that private institutions might be able to profitably replace government, medieval Iceland remains Exhibit A.

The chief obstacle to persuading others with that exhibit is, well, *medieval Iceland*. Medieval Iceland conjures many things—glaciers, Vikings, volcanoes—but a prosperous society you might want to inhabit is not one of them. The details of medieval Icelandic institutions do not improve that impression: “Killing was a civil offense resulting in a fine paid to the survivors of the victim. Laws were made by a ‘parliament,’ seats in which were a marketable commodity. Enforcement of law was entirely a private affair” (Friedman 1979: 400).

These institutions are conventionally regarded as defective. To treat killing as a civil offense is regarded as licensing the wealthy to dispatch the poor. To make lawmaking a marketable commodity is regarded as making property security a privilege of the highest bidder. To put law enforcement in private hands is regarded as institutionalizing might as the source of rights. No prosperous society relies on such governance institutions, conventional wisdom observes, and every prosperous society has government.

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<sup>1</sup> Anarcho-capitalism is a variety of libertarianism according to which all government institutions can and should be replaced by private ones. Less radical varieties of libertarianism maintain that most government institutions can and should be replaced by private ones, but not all of them—for example, law, police, courts, and national defense. Anarcho-capitalism’s most well-known advocates are David Friedman and Murray Rothbard. See, for instance, Friedman (1973) and Rothbard (1973).

<sup>2</sup> The other example being the nineteenth-century American West, introduced to the economics literature by Terry Anderson and P.J. Hill (1979) (though some of its features were analyzed earlier by John Umbeck (1977)).

While that observation is correct, it cannot be properly used to dismiss anarcho-capitalists as crazy, for it does not imply that living standards in medieval Iceland would have been higher under government. Every society in medieval Europe was poor by modern standards, and whether medieval Iceland would have enjoyed higher living standards under government is an empirical question that has not been evaluated empirically. We provide such an evaluation by exploiting the fact that, in contrast to Iceland, other territories in medieval Europe were governed partly by government.

Medieval Icelanders did not have time machines. Their governance possibilities, therefore, were limited by the governance institutions possible in medieval Europe. Those included the private governance institutions that medieval Icelanders had, the governmental institutions that medieval Icelanders did not have, and a combination of the two, which is what all medieval Europeans except for Icelanders had. They did not, however, include the governmental institutions that modern Europeans have, since in the Middle Ages those governance institutions did not exist.

Modern governmental institutions are probably the ones that most people who dismiss anarcho-capitalists as crazy have in mind when they suggest that it is obvious that living standards in medieval Iceland would have been higher under government. That comparison, however, is nonsensical for the reason just described. To evaluate whether living standards in medieval Iceland would have been higher under government, one must compare medieval Icelandic living standards to living standards in state-governed medieval Europe. Was Iceland poorer than, say, England in the thirteenth century?

To find out, we examine historical data on human height, wages, and population growth in Iceland and other territories in medieval Europe. The data are sparse and crude, so the results of our comparison are too. Still, they are instructive. Living standards in state-governed medieval Europe do not seem to have been higher than they were in Iceland. Anarcho-capitalists, it seems, are not insane.

## 2 Human Height

Richer people tend to be better nourished, and since better nourished people tend to be taller, richer people also tend to be taller. “Income is a potent determinant of stature” (Steckel 2008: 136). When data on historical income are unavailable, as they often are for medieval Europe, social scientists thus measure historical living standards with data on historical stature (see, for instance, Fogel

1994; Steckel 1995; Komlos and Baten 1998; Steckel and Rose 2002; Heyberger 2011; Steckel et al. 2018). Data on medieval citizens' average heights across European territories come from medieval citizens' skeletal remains, dated and measured by archeologists. We use these data to compare living standards across territories in medieval Europe.

Our comparison assumes that individuals' growth potentials did not differ systematically across the territories we compare. Only a small part of the variation in individuals' heights is determined by differences in their living standards, mostly in their childhood diets (caloric consumption and quality). The rest is determined by differences in individuals' genetics. Thus, if groups of individuals with different ancestries have different average growth potentials, differences in their average heights may reflect genetic differences rather than different living standards. Scientists cannot say whether such differences in growth potential exist, but if they do, it seems they are not more than a few centimeters (Steckel 2013: 407). For the comparisons we make, however, even that possibility is not a concern. The benchmark territories to which we compare Iceland are, like Iceland, Northern European. Hence, the ancestries of their medieval inhabitants were nearly identical to those of medieval Icelanders. Indeed, medieval Europeans who hailed from two territories we consider—Norway and Britain—*were* medieval Icelanders: Norwegians, Irishmen, and Scots settled Iceland in the late ninth century.<sup>3</sup>

Caution is nevertheless warranted when interpreting height differences in our comparison. The archaeological samples available are small, precluding their disaggregation into more precise time periods. The Icelandic sample for the period reflecting the twelfth through sixteenth centuries, for example, contains only six skeletons. The samples, moreover, do not tell us about the socio-economic status of the people whose skeletal remains they contain. Hence, we have no way of knowing whether our comparisons are of people who had similar status.

Another reason for caution when interpreting height data is that while average height is a good measure of poverty, it is a poor measure of wealth. “[O]nce income is sufficient to satisfy caloric requirements, only modest increases [in height] are attainable through change in the diet” (Steckel 2008: 137). Two territories with similar average heights may therefore have dissimilar living standards if living standards in both territories are high enough to satisfy nutritional needs.

A final reason for caution is that average height depends not only on average income but sometimes also on its distribution. Consider two territories, both with two citizens. In the first

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<sup>3</sup> Norwegians in much larger number than Irishmen or Scots.

territory, each citizen's income is just enough to satisfy nutritional needs. In the second territory, one citizen's income is 1.5 times that amount, and his compatriot's income is just half of it. Average income is the same in both territories, but average height is taller in the first. Medieval Iceland was an exceptionally equal society (Friedman 1979; Byock 1988; Miller 1988).<sup>4</sup> The average Icelander might therefore have been taller even if other medieval Europeans were just as rich.<sup>5</sup>

These limitations, however, should not obscure the bigger picture. If Icelandic living standards differed notably from those in other territories in medieval Europe, Icelanders would have been notably shorter. Even European territories that were wealthy by medieval standards were quite poor, and height tracks living standards most closely amid poverty.

We collect data on average adult height from Steckel (2004) and on average adult male height from Cairns (2015).<sup>6</sup> Our data cover various periods between the tenth and sixteenth centuries for six Northern European territories, four of them Nordic: Denmark, Iceland, Norway, Sweden, England, and Scotland. To supplement our comparison within this benchmark group, we collect height data from Cairns (2015) that cover two non-Northern European territories, Germany and Crete/Greece, and height data from Koepke and Baten (2008) that cover two non-Northern European regions, Central-Western Europe and Mediterranean Europe. Table 1 presents our height data.

Among medieval Northern Europeans, Icelanders were probably taller than Englishmen, Norwegians, Scots, and possibly Danes. They were probably shorter than Swedes. Among non-Northern Europeans, Icelanders were probably taller than Mediterranean Europeans and Central-Western Europeans. They were probably shorter than Germans. We say probably since, for most territories, our data cover different periods. Still, a pattern is clear. Apart from Sweden, average height in Iceland seems to have been close to or taller than elsewhere in medieval Europe.

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<sup>4</sup> Until around the time that Iceland converted to Christianity, Icelandic chieftains who sold governance services (*goðar*) were not much richer than the Icelanders who bought those services (*goðorð*) (Solvason 1990; 1993). Only in the Icelandic Commonwealth's final years does it seem that wealth inequality increased (Byock 1988).

<sup>5</sup> At least, provided that richer citizens in other European territories were rich enough to satisfy nutritional needs.

<sup>6</sup> Steckel reports additional information from sources concerning Sweden, Denmark, and Norway that show average heights to be generally below those for Iceland. He does not report centuries, however, as the sources in question appear to have been unable to date the remains precisely (they are dated only as the "Middles Ages"). While including these data would support the finding below that average height in Iceland was taller than in the benchmark territories, we exclude them because they lack information on centuries.

Certainly, it was not notably shorter. Living standards as proxied by height do not seem to have been higher in state-governed medieval Europe than they were in Iceland.

The heights of individuals who settled Iceland in the late ninth century were “imported” from their home territories. Because height is determined mostly by genetics and the part that is determined by living standards depends mostly on childhood diet, differences in living standards between Iceland and the home territories of Icelandic settlers would be manifested in the heights of latter’s descendants, not in the heights of the settlers themselves: changes in height resulting from changes in living standards occur with a lag. It is hazardous to interpret the Icelandic height data in Table 1 temporally and with an eye to discerning how the heights of settlers’ descendants differed from the heights of settlers. The samples are tiny; the periods are broad; and migration to Iceland did not end after it was settled. Still, the data do not suggest that successive generations of Icelanders became shorter; if anything, they became taller.

It is more hazardous still to try to compare how average height in Iceland changed over time relative to how it changed in the other benchmark territories. Denmark and Scotland cannot be considered at all because we have just one data point for each. England has only two data points. And, as noted above, our data points for the other territories are for overlapping but different periods. Bearing this in mind, Swedes, in contrast to Icelanders, seem to have become shorter over time, and Norwegians seem to have remained the same height. These comparisons must be taken with a large grain of salt, but they do not suggest that Icelandic living standards as proxied by changes in height were falling over time relative to living standards in state-governed medieval Europe.

### 3 Wages

Wages measure living standards more directly than human height. Data that could be used to estimate and compare real wages across territories in medieval Europe, however, are rare. The richest medieval wage and price data belong to England. England is not a Nordic territory, but it is a Northern European one. As another way to assess relative living standards, we therefore compare estimates of real wages in medieval Iceland and England.

Friedman (1979) uses information on the Icelandic exchange rate between silver and woolen cloth (*vaðmal*) and the productivity of female Icelandic clothmakers to estimate an annual wage for medieval Icelandic women c.1200. His estimate, which assumes an ability to produce 56

centimeters of cloth per day, implies an Icelandic female wage equal to 28.8 grams of silver per year.<sup>7</sup> Recent work suggests that Scandinavian clothmakers were more productive than Friedman assumed: they produced perhaps 70 centimeters per day (Øye 2015: 44). Updating Friedman's estimate to reflect this work implies an Icelandic female wage equal to 36 grams of silver per year.<sup>8</sup>

Medieval men earned more than medieval women, and our English wage data are for males. We therefore need to estimate Icelandic male wages. Economic historians do not know how much higher men's wages were in medieval Iceland, but they do have an idea of how much higher they were in medieval England: for casual laborers in the thirteenth century, men's wages were 1.33 times higher than women's (Humphries and Weisdorf 2015: 431). If the same gender multiple prevailed in Iceland, this implies an Icelandic male wage equal to 47.88 grams of silver per year.

Humphries and Weisdorf (2019) furnish data on annual male wages in historical England. They assemble these data from yearly contracts for agricultural and farm-making activities. Humphries and Weisdorf's wage estimates reflect the sum of contractually stipulated monetary and in-kind compensation, the latter tallied in money. We use their wage estimate for the 1260s, the closest available years to our Icelandic wage estimate, which is also for the thirteenth century. Humphries and Weisdorf's estimate implies an English male wage equal to 310.73 grams of silver per year.<sup>9</sup>

That is far higher than our estimate for Iceland, but the two wage estimates cannot yet compare living standards since they are nominal, not real. The prices of goods traded internationally converge across countries; the prices of goods traded only domestically do not. Silver was traded internationally, but most of the goods produced in medieval Iceland were traded only there (with the exception of wool, which Icelanders exported), and also for medieval England (with the exception of grain, which Icelanders imported) (Gelsinger 1981: 12-16). Price levels in Iceland and England therefore differed, which means that the purchasing power of silver did too.

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<sup>7</sup> Friedman estimates a wage of 48 ells of *vaðmal* per year. An ell was equal to one-sixth ounce-units of silver (Dennis et al. 2000a: 253). Between the tenth and thirteenth centuries, the exchange rate between an ounce-unit of silver and an ounce-weight of silver fluctuated (Dennis et al. 2000b: 359-60; Gelsinger 1981: 38), but c.1200, an ounce-unit of silver was equal to 1/7.5 ounce-weights of silver. An ounce-weight of silver was generally equal to 27 grams of silver (Dennis et al. 2000a: 253). Hence, Friedman's estimate implies annual wage of  $(48/6 =) 8$  ounce-units of silver, which is equivalent to  $(8/7.5 =) 1.067$  ounce-weights of silver, which is equivalent to  $(1.067*27=)$  28.8 grams of silver.

<sup>8</sup>  $70/56*28.8 = 36$ .

<sup>9</sup> Humphries and Weisdorf estimate a wage of 236 pence per year. A pound sterling, which was equivalent to 240 pence, equaled 316 grams of silver (Clark 2005), based on the market price (Clark reports a small difference of 5.1 grams between the mint and market price). Hence, Humphries and Weisdorf's estimate implies a wage of  $(236/240*316 =)$  310.73 grams of silver per year.

Economic historians' favored solution to this problem is to assemble for each country prices for a shared basket of subsistence goods and then to divide each country's estimated annual wage by the price of its basket (Allen 2001, 2009, Allen et al. 2012). We do not have Icelandic prices for the goods that compose the usual shared basket. But we do have Icelandic and English prices for several other goods that comprised a substantial share of what medieval Europeans consumed (Phelps-Brown and Hopkins 1956; Dyer 1989). We therefore create a shared basket composed of those goods and use this basket to compare the purchasing power of estimated wages in medieval Iceland and England.

We assemble Icelandic price data on beef, wool, butter, cheese, suet (tallow), and dried fish c.1200 using information from the second volume of *Grágás*, a collection of laws in medieval Iceland (Dennis et al. 2000b: 210, 358-359; supplemented in the case of beef with data from Hartman et al. 2017: 134).<sup>10</sup> The prices in *Grágás* are for “a cow,” a “load” of wool, of butter, of cheese, of suet, and for 120 dried fish—all in ounce-units of silver. We convert them into prices for a pound of beef, of wool, of butter, of cheese, of suet<sup>11</sup>, and for a single dried fish—all in grams of silver.<sup>12</sup> A “load” equaled 80 pounds (Dennis 2000b: 183). An ounce-unit of silver equaled 3.6 grams of silver (Dennis 2000a: 253). And we assume that a cow weighed 750 lbs. dressed.<sup>13</sup> Table 2 presents our Icelandic price data.

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<sup>10</sup> *Grágás* also contains two prices for “meal” (Dennis et al. 2000b: 210, 359), which probably refers to an ingredient for porridge (Skarup 1993: 135-136). The details are unclear, however, so we do not consider meal. The Icelandic price of beef we use is probably too high, in which case our estimate of the purchasing power of Icelandic wages is too low. The cow price we use to arrive at the price of a pound of beef is for a cow of prime age, which would have been used for breeding, for farming, and for dairy products and therefore reflects more than just beef. Animals slaughtered for beef would rather have been older field animals, whose price would have been lower. For example, according to Dennis et al. (2000b: 109, 358), a “three winter ox or older” and a “four winters old” ox were (at different times) the equivalent of a cow. As an ox tends to be heavier than a cow, this means more beef per animal at the same price for the whole animal and thus a lower price per pound. With a mere 10 percent more beef per animal, the purchasing power of Icelandic wages for beef would jump ahead of England's. Dennis et al. (2000b: 208) also indicate that a “dry cow (i.e. when milk production ceases prior to calving) and a heifer of two winter” were worth the “price of a cow less the hire charge” (which was 10 percent of the price of a cow). Also, “A barren cow and a three-winter ox” were three-quarters of the price of a normal cow (Dennis et al. 2000b: 208). This information implies that the Icelandic price of beef may have been lower still.

<sup>11</sup> The Icelandic prices of suet and of cheese we use are (also) probably too high, in which case our estimate of the purchasing power of Icelandic wages is (again) too low. Dennis et al. (2009: 359) present information that suggests Icelandic prices of suet and cheese may have been only half of the prices we use. This information, however, does not specify weight units, so we do not use it.

<sup>12</sup> *Grágás* contains two prices for a load of wool, and between *Grágás* and Hartman et al. (2017), we have two prices for a cow. In both cases, we take the price midpoint.

<sup>13</sup> The weight of a typical dressed cow in mid-nineteenth century Canada (Lewis and McNinn 1984: 71). We assume this weight on the grounds that Canada offers the closest conditions for cattle as Iceland. It is perhaps too high, but for want a more accurate weight, and given the conservative assumptions we make for the Icelandic price of cows in note 10, we do not think the assumption unreasonable.

We collect English price data from Clark (2004, 2005, 2010) for the same goods between 1209 and 1260, the closest matching years for which data are available.<sup>14</sup> In Table 3, columns 1 and 3 compare the quantities of each good that a worker's annual wage could in principle purchase in thirteenth-century England and Iceland, respectively. An Englishman's wage could purchase substantially more beef, butter, cheese and tallow. An Icelander's wage could purchase substantially more wool and about the same number of fish.

We are not done, however, for what matters to workers' living standards is not the quantity of goods their wages can in principle purchase but the quantity of goods their wages can purchase after taxes: their disposable real wages. Medieval Icelanders paid their chieftains (*goðar*) for governance services, but the sums they paid were trivial (Byock 1988). In Iceland, therefore, "pre-tax" and "after-tax" wages were about the same. In England they were not. Medieval English workers paid heavy taxes to their feudal lords: between a quarter and half of their gross farm output (see, for example, Postan 1966; Dyer 1989; Rigby 1995; Kitsikopoulos 2000; Hatcher 2015).

Column 2 in Table 3 uses these tax rates to tabulate disposable real wages in England. Comparing England's wages in column 2 to Iceland's in column 3, England, unsurprisingly, fares worse than before. After taxes, an Englishman's wage could purchase more butter, cheese, and tallow than an Icelander's wage. But an Icelander's wage could purchase more beef, wool, and fish. The result of this contest is ambiguous, but if anything, the honor goes to Iceland, whose harsher climate and terrain would have required more productive labor to match real disposable wages in England. Living standards as proxied by disposable real wages do not seem to have been higher under government in thirteenth-century England than they were in thirteenth-century Iceland.

Government in medieval England collected taxes, minted coins, supplied defense and, to a lesser extent, provided legal adjudication (Dyer 2002: 50-58). Still, compared to most governments of the period, England's was not well developed. While medieval Iceland was "more stateless" than medieval England, medieval England, therefore, was "more stateless" than most of the rest of medieval Europe and the Mediterranean (Friedman et al. 2019; Downing 1989; Volckart 2000; 2002). Given this fact, and since our wage data compare only Iceland and England, it is useful to

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<sup>14</sup> Clark's (2004) fish-price data are for herring only, fresh not dried. To compare with them with our dried fish-price data for Iceland, we multiply Clark's fresh-fish price by 1.5.

know how living standards in England fared relative to living standards elsewhere. That would allow us, by “triangulation,” to get a sense where Iceland fell in terms of living standards relative to state-governed Europe and the Mediterranean more generally. Ridolfi (2016; 2019) finds that in the thirteenth century, England was about as rich France. Álvarez-Nogal and Prados de la Escosura (2013) and Malanima (2013) find that in the early fourteenth century, Spain and Italy were modestly richer than England. Krantze (2017) finds that c.1300, Sweden was poorer than England. And Pamuk and Shatzmiller (2014) find that in the thirteenth century, Lower Egypt and Southern Iraq were substantially poorer than England.<sup>15</sup> The ranking these findings suggests is extremely crude, but among the medieval territories enumerated above, England appears to be in the middle or upper-middle of the pack, which in turn suggests that Iceland was too.

## 4 Population Growth

Preindustrial economies were overwhelmingly agricultural, dependent heavily on land, a fixed input. They were also economies in which the rate of productivity improvement, while positive, was very low. If that rate was lower than the rate at which returns to labor diminished, the result was Malthusian: population increased permanently but living standards only temporarily. If, however, the rate of productivity improvement at least equaled the rate at which returns to labor diminished, both population and living standards increased permanently. Economic historians debate whether the latter scenario characterized parts of preindustrial Europe or the former scenario prevailed in all of it (see, for instance, Persson 1988; Clark 2007). In either scenario, however, a preindustrial economy’s population would increase—via a rising birth rate, a falling death rate, and/or by attracting immigrants—if its living standards increased even temporarily, and vice versa To compare changes in living standards in Iceland and other territories in medieval Europe, we thus compare changes in their populations.

Our comparison assumes that if there were exogenous shocks to productivity or population between the tenth and thirteenth centuries, they were common across the territories we compare. This assumption is false, but for our purposes it is acceptable. There were not to our knowledge any important environmental changes or plagues in the tenth through thirteenth centuries affecting the territories we compare. The Little Ice Age did not begin until the fourteenth century, nor did

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<sup>15</sup> Mediterranean territories tended to have the most developed governments in the Middle Ages.

the Black Death. There were, however, important differences in migration policies that affected our territories. To deter his citizens from migrating to Iceland, in the late ninth or early tenth century, Norway's King Harald imposed a tax on Norwegians who departed for Iceland, even just to visit (Gjerset 1922: 20).<sup>16</sup> This tax, equal to five times our estimated Icelandic annual wage, remained in place until Norway annexed Iceland in 1262 (Gelsinger 1981: 178).<sup>17</sup> Norway's migration policy supports a result from our comparison of living standards as proxied by height in Table 1: Iceland's living standards were probably higher than Norway's. If not, an enormous duty would not have been needed to dissuade Norwegians from moving to Iceland. Norway's migration policy also violates our assumption of shared shocks. But since this violation will only understate relative improvements in Icelandic living standards as proxied by population growth, it is one we can accept.

When land constraints do not bind, population growth may reflect increased land usage instead of increased living standards. Our comparison thus also assumes that land was a binding constraint in the territories we compare. For Iceland, this assumption may seem unreasonable. In the eleventh century, Iceland had an estimated 50,000 people, while the British Isles, for example, had two million. The British Isles have more land area than Iceland, but by a factor of three, not 40. If land was a binding constraint in the British Isles, it seems unlikely that it could have been binding in Iceland too. Yet there is a good reason to think that it was: Iceland's agriculturally unfavorable, volcanic, and geyser-ridden terrain. Land was much less productive in Iceland than elsewhere in Europe (Hartman et al. 2017; Gelsinger 1981: 5-6; European Soil Data Centre 2005). Hence, in Iceland, diminishing returns diminished much sooner.

Caution is nevertheless warranted when interpreting population growth differences in our comparison. "Most of the [population] figures relating to periods before the middle of the seventeenth century are little more than educated guesses" (Tomasson 1977: 405). Broad trends in population change over the Middle Ages may therefore be discerned, but more than that cannot be.

We tabulate population changes using population data from McEvedy and Jones (1978). Our data cover four territories, two of them Northern European, Iceland and the British Isles, and

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<sup>16</sup> The precise timing of the tax's imposition is unclear, but King Harald ruled Norway between 872 and 933. The tax must therefore have been introduced in either the late ninth or the early tenth century.

<sup>17</sup> Five ounce-weights of silver.

two of them non-Northern European, France and Germany. Population data are available for following years, albeit with holes: 800, 925, 1000, 1100, and 1200. Table 4 presents our population data.<sup>18</sup>

Over the course of the Middle Ages, all four territories' populations grew significantly. They did not, however, grow equally. Between 925—the first year for which Icelandic data are available—and 1100, Iceland's population grew by a factor of 2.33. Between 800—the first year for which data are available for the British Isles, France, and Germany—and 1100, those territories' populations grew by factors of 2.5, 1.55, and 1.23, respectively. Between 1100 and 1200, Iceland's population did not grow, but populations in the British Isles, France, and Germany did.

Between the tenth and twelfth centuries, therefore, changes in living standards as proxied by changes in population do not seem to have been more positive in state-governed medieval Europe than they were in Iceland. Between the twelfth and thirteenth centuries, they do, but not necessarily because of differences in governance. Between 950 and 1350, Europe underwent a commercial revolution that, by expanding international trade, increased economic and population growth, especially after 1100 (Lopez 1976; Cantoni and Yuchtman 2014). Iceland, which was at the periphery of this development and faced higher transportation costs than other parts of Europe, was less able to participate in the revolution—a violation of our assumption of shared shocks. Lower population growth in Iceland compared to other parts of Europe after 1100 may therefore reflect this fact rather than lower performing Icelandic governance institutions.<sup>19</sup>

## 5 Conclusion

Contrary to conventional wisdom, living standards under government need not be higher than under government's absence (Leeson 2007c, 2014). A small but growing empirical literature studies situations where they are not. Leeson (2007d), Powell, Ford, and Nowrasteh (2008), and Leeson and Williamson (2009) examine welfare in Somalia before and after its government collapsed. Somali welfare improved under anarchy and improved more than welfare in some of

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<sup>18</sup> The Icelandic figures are conservative. Gelsing (1981: 8) suggests that c.1100, Iceland's population was between 80,000 and 100,000.

<sup>19</sup> Another possible reason for Iceland's population plateau after 1100, also unrelated to its governance institutions, is net emigration. By 1100, Iceland's most productive lands may have already been occupied, leading to some of its population to move elsewhere. We thank an anonymous reviewer for suggesting this possibility and the one above.

Somalia's state-governed neighbors. More recently, Candela and Geloso (2019) compare wealth in the nearly stateless French-Canadian colony of Acadia and in state-governed French-Canadian colonies like Quebec in the seventeenth and eighteenth centuries. Acadia was significantly wealthier than Quebec. Private institutions, most notably for the governance of conflict, were associated with higher living standards, not lower ones.

Our study contributes to this literature by considering a favorite example of anarcho-capitalists: medieval Iceland, which was also governed privately. The data available for comparing living standards in Iceland and other territories in medieval Europe—data on human height, wages, and population growth—are sparse, crude, and therefore challenging to interpret. But a basic picture is apparent nonetheless and suggests a negative conclusion if not a positive one. Living standards in state-governed medieval Europe do not seem to have been higher than they were in Iceland. Anarcho-capitalists, it seems, are not insane.

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Table 1. Comparative Living Standards Proxied by Human Height

|                        | Average height (cm) | Centuries                          | Source                  |
|------------------------|---------------------|------------------------------------|-------------------------|
| Iceland                | 172.3               | 9 <sup>th</sup> -11 <sup>th</sup>  | Steckel (2004)          |
|                        | 172                 | 11 <sup>th</sup> -12 <sup>th</sup> | Steckel (2004)          |
|                        | 169-176.5           | 11 <sup>th</sup> -14 <sup>th</sup> | Cairns (2015)           |
|                        | 175.2               | 12 <sup>th</sup> -16 <sup>th</sup> | Steckel (2004)          |
| Denmark                | 172.2               | 13 <sup>th</sup>                   | Steckel (2004)          |
| Norway                 | 170-173.3           | 10 <sup>th</sup> -14 <sup>th</sup> | Cairns (2015)           |
|                        | 170.2               | 12 <sup>th</sup>                   | Steckel (2004)          |
|                        | 172.2               | 12 <sup>th</sup> -13 <sup>th</sup> | Steckel (2004)          |
| Sweden                 | 176                 | 10 <sup>th</sup> -11 <sup>th</sup> | Steckel (2004)          |
|                        | 174.3               | 13 <sup>th</sup>                   | Steckel (2004)          |
|                        | 172.8               | 11 <sup>th</sup> -16 <sup>th</sup> | Steckel (2004)          |
| England                | 167-170             | 10 <sup>th</sup> -14 <sup>th</sup> | Cairns (2015)           |
|                        | 171.8               | 13 <sup>th</sup> -14 <sup>th</sup> | Steckel (2004)          |
| Britain                | 168.4               | 12 <sup>th</sup>                   | Steckel (2004)          |
| Scotland               | 170-173             | 10 <sup>th</sup> -14 <sup>th</sup> | Cairns (2015)           |
| Germany                | 173.3               | 10 <sup>th</sup> -14 <sup>th</sup> | Cairns (2015)           |
| Central-Western Europe | 169.7               | 10 <sup>th</sup>                   | Koepke and Baten (2008) |
| Greece/Crete           | 161-170             | 10 <sup>th</sup> -14 <sup>th</sup> | Cairns (2015)           |
| Mediterranean Europe   | 168.4               | 10 <sup>th</sup>                   | Koepke and Baten (2008) |

Notes: Data from Cairns (2015) are for adult male height; all other data are for adult height. Norwegian data for the twelfth and thirteenth centuries are from skeletal samples of unknown size (Steckel 2004: 215).

Table 2. Prices for Goods in Iceland c.1200

|                   | Price (grams of silver) |
|-------------------|-------------------------|
| Beef/lb.          | 0.065                   |
| Wool/lb.          | 0.34                    |
| Butter/lb.        | 0.45                    |
| Cheese/lb.        | 0.45                    |
| Suet (tallow)/lb. | 0.45                    |
| Dried fish/unit   | 0.15                    |

Notes: Prices tabulated using price/units data from Dennis et al. (2000b) and Hartman et al. (2017).

Table 3. Comparative Living Standards Proxied by Real Wages

|               | (1)                                      | (2)  | (3)                             |
|---------------|--|--|---------------------------------|
|               | English-wage purchasing power, “pre-tax” | English-wage purchasing power, “after-tax” | Icelandic-wage purchasing power |
| Beef          | 995.70 lbs.                              | 497.85-746.78 lbs.                         | 738.89 lbs.                     |
| Wool          | 111.06 lbs.                              | 55.53-83.29 lbs.                           | 141.87 lbs.                     |
| Butter        | 269.10 lbs.                              | 134.55-201.82 lbs.                         | 106.40 lbs.                     |
| Cheese        | 519.66 lbs.                              | 259.83-389.75 lbs.                         | 106.40 lbs.                     |
| Suet (tallow) | 219.50 lbs.                              | 109.75-164.62 lbs.                         | 106.40 lbs.                     |
| Dried fish    | 320.08 fishes                            | 160.04-240.06 fishes                       | 319.20 fishes                   |

Notes: English-wage purchasing power tabulated using English price data from Clark (2004, 2005, 2010) for 1209-1260 and Humphries and Weisdorf’s (2019) English wage estimate for the 1260s. Clark’s (2005) fish price is for fresh herring only; we multiply that price by 1.5 to “convert” it into a dried-fish price. Icelandic-wage purchasing power tabulated using Icelandic price data c. 1200 from Table 2 and our Icelandic wage estimate c.1200.

Table 4. Comparative Change in Living Standards Proxied by Population Change

|                                    | 800 AD    | 925 AD | 1000 AD               | 1100 AD                | 1200 AD                 |
|------------------------------------|-----------|--------|-----------------------|------------------------|-------------------------|
| Iceland pop.<br>( $\Delta$ )       |           | 30,000 | 50,000<br>(+66.67%)   | 70,000<br>(+40%)       | 70,000<br>(+0%)         |
| British Isles pop.<br>( $\Delta$ ) | 1,000,000 |        | 2,000,000<br>(+100%)  | 2,500,000<br>(+25%)    | 3,500,000<br>(+40%)     |
| France pop.<br>( $\Delta$ )        | 5,000,000 |        | 6,500,000<br>(+30%)   | 7,750,000<br>(+19.23%) | 10,000,000<br>(+29.03%) |
| Germany pop.<br>( $\Delta$ )       | 3,250,000 |        | 3,500,000<br>(+7.69%) | 4,000,000<br>(+14.29%) | 6,000,000<br>(+50%)     |

Notes: Population data are from McEvedy and Jones (1978).