

Billionaires*

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Abstract

Existing studies of entrepreneurship focus on entrepreneurs whose individual contribution to wealth creation is typically trivial: self-employed persons. This paper investigates entrepreneurs whose individual contribution to wealth creation is enormous: billionaires. We explore the relationship between economic development, institutions, and these contrasting kinds of entrepreneurs. We find that the institutions consistent with self-employed entrepreneurs differ markedly from the ones consistent with billionaires. Further, only the latter are consistent with the institutions that underlie economic prosperity. Where well-protected private property rights and supporting, market-enhancing institutions flourish, so do billionaires. But self-employed entrepreneurs don't. Where private property rights are weakly protected and interventionist institutions flourish, so do self-employed entrepreneurs. But billionaires don't.

JEL codes: L26, O17, N2, H2, L53.

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1 Introduction

A tiny number of the world's entrepreneurs produce an enormous amount of the world's wealth. These entrepreneurs are billionaires: entrepreneurs who made a billion dollars or more founding and growing new businesses.¹ Billionaires' net worth reflects their businesses' profits and capital gains. In well-functioning market economies it measures the total social value billionaires have contributed to the world.

That contribution is astonishing. Consider the United States. In 2009 there were 234 billionaires in the United States worth \$718 billion collectively.² America's billionaires comprised less than 0.00008 percent of its population. But they contributed more than 1.3 percent of its wealth.

Compare billionaires' contribution to wealth to self-employed entrepreneurs' contribution. In 2009 America's self-employed entrepreneurs were collectively worth nearly 28 times what its billionaires were worth (Federal Reserve 2011).³ But they were more than 61,000 times as numerous (Hipple 2010).⁴ The median self-employed entrepreneur's contribution to wealth was just over \$365,000 (Bricker et al. 2011). The median billionaire entrepreneur's contribution was more than 4,600 times larger.

Clearly all entrepreneurs aren't created equal. The vast majority contribute almost nothing to global prosperity. An elite, super-rich few contribute to global prosperity in remarkable disproportion to their number.

Existing studies of entrepreneurship focus on entrepreneurs whose individual contribution to wealth creation is typically trivial: self-employment persons (see, for instance, Evans and Jovanovic 1989; Evans and Leighton 1989; Blanchflower and Oswald 1998; Fairlie 1999; Gentry and Hubbard 2000; Hamilton 2000; Bruce and Schutze 2004; Lazear 2004; Bitler

¹Not all billionaires made their fortunes this way. As we describe below, this paper considers those who did.

²Nordhaus (2004) estimates that American entrepreneurs only capture a small share of the social value they create as private wealth. This suggests that some billionaires may have created tens or even hundreds of billions dollars of social value through their entrepreneurship.

³This figure is based on an estimate of household's net worth whose head of household is self-employed. It provides only a crude idea of self-employed entrepreneurs' net worth. Estimating the earnings and net worth of self-employed persons is notoriously difficult due to income under-reporting and the problem of separating capital earnings from labor earnings. See, Henrekson and Sanandaji (2011).

⁴This figure is based on an estimate of the number of incorporated and unincorporated, non-agricultural self-employed persons in the United States, which includes the part-time self-employed.

et al. 2005; Guiso et al. 2006; Cagetti and De Nardi 2009).⁵ This paper investigates entrepreneurs whose individual contribution to wealth is enormous: billionaires. We explore the relationship between economic development, institutions, and these contrasting kinds of entrepreneurs.

Our paper is the first to study billionaire entrepreneurs. However, previous work attempts to distinguish “high-impact entrepreneurship” from its low-impact, self-employed counterpart. One approach considers faster-growing firms (for a survey of this work, see Henrekson and Johansson 2010). Another approach uses the Global Entrepreneurship Monitor’s (GEM) “high-growth entrepreneurship” variable, which measures the frequency of firm owners who employ 20 or more persons.⁶ For example, Autio (2005, 2007), Bowen and De Clercq (2008), and Estrin, Korosteleva, and Mickiewicz (2009) consider how institutions and policies are related to “high-growth” versus low-impact entrepreneurial activity.⁷

Our approach provides an alternative look at “high-impact” entrepreneurial activity. We develop a new measure of that activity based on *Forbes Magazine*’s list of “The World’s Billionaires.” In considering billionaires, our approach focuses on the aspect of entrepreneurship that researchers and policymakers presumably care about most: wealth creation.

The results of our empirical analysis are simple but striking. First, self-employed entrepreneurs are associated with poverty, not wealth. In contrast, billionaires are associated with wealth rather than poverty.

Second, the institutions consistent with self-employed entrepreneurs differ markedly from the ones consistent with billionaires. Where well-protected private property rights and supporting, market-enhancing institutions flourish, so do billionaires. But self-employed en-

⁵Or, what’s similar, they analyze small business ownership (see, for instance, Gentry and Hubbard 2004; Hurst and Lusardi 2004; Djankov et al. 2006; Paulson, Townsend, and Karaivanov 2006). Looking at the United States, Holtz-Eakin, Joulfaian, and Rosen (1994a, 1994b) consider persons who file schedule Cs with their income tax returns.

⁶GEM also has a variable called “high-expectation entrepreneurship.” It measures the frequency of firm owners who say that they intend to hire 20 employees or more over the next five years. Other approaches to capturing high-impact entrepreneurship include, for instance, distinguishing self-employed firms and spinoffs from larger companies (Andersson and Klepper 2012) and measuring venture capital investments (Lerner and Tåg 2012).

⁷Our paper is also closely connected to the large literature that considers institutional determinants of entrepreneurial activity across countries. See, for instance, Fonseca, Lopez-Garcia, and Pissarides (2001), Ovaska and Sobel (2005), Holtz-Eakin and Rosen (2005), Kannianen and Vesala (2005), Grilo and Thurik (2005, 2008), Hall and Sobel (2006), Klapper, Laeven, and Rajan (2006), Stel, Story, and Thurik (2007), Sobel, Clark, and Lee (2007), Ho and Wong (2007), and Aidis, Estrin, and Mickiewicz (2009).

trepreneurs don't. Where private property rights are weakly protected and interventionist institutions flourish, so do self-employed entrepreneurs. But billionaires don't.

Finally, only the institutions that we find are consistent with billionaires are also consistent with the institutions that underlie economic prosperity. The institutions that we find are consistent with self-employed entrepreneurs are the ones associated with comparative economic poverty.

2 Institutions and Entrepreneurship

2.1 Productive and Unproductive

William Baumol (1990) distinguishes two forms of entrepreneurship: “productive” and “unproductive.” Productive entrepreneurial activity improves resources’ social value through innovation. In doing so it creates wealth and contributes to prosperity. Productive entrepreneurs whose innovation creates enormous wealth generate enormous profits. These entrepreneurs are billionaires.

Unproductive entrepreneurial activity wastes resources through rent seeking. In using resources in ways that create less social value than alternative uses, unproductive entrepreneurial activity undermines wealth creation and contributes to poverty.

Institutions channel entrepreneurial activity productively or unproductively. They do so by determining the relative payoff of socially productive innovation versus rent seeking. “Limited governments” wherein state authority is used to define and enforce property rights but otherwise intervenes minimally with the operation of markets tend to channel entrepreneurial activity productively. In these institutional environments innovation’s payoff is comparatively large. Rent seeking’s payoff is comparatively small.

“Unlimited governments” wherein state authority neglects private property protection and is used to intervene significantly with the operation of markets tend to channel entrepreneurial activity unproductively. In these environments innovation’s payoff is comparatively small. Rent seeking’s payoff is comparatively large.

A large empirical literature confirms that the former institutional environments pro-

duce wealth, while the latter institutional environments produce poverty (see, for instance, Acemoglu, Johnson, and Robinson 2001; Acemoglu and Johnson 2005; Gwartney et al. 1999; Scully 1988).⁸ Baumol’s distinction suggests a ready reason for this result in the language of entrepreneurship. Institutions of private property protection and more constrained government—what we call “ideal institutions”—encourage productive entrepreneurship and discourage unproductive entrepreneurship. Institutions of weak property protection and less constrained government—what we call “inferior institutions”—do the reverse.

2.2 Evasive

Institutions not only channel entrepreneurial activity. They influence the supply of entrepreneurs by influencing the relative payoff of working for others versus self-employment.

Individuals choose self-employment over working for others when self-employment is more lucrative. Under ideal institutions this is when self-employment creates more social value. Here self-employment tends to reflect productive entrepreneurship.

In contrast, under inferior institutions individuals may find self-employment more lucrative than working for others even when self-employment creates less social value.⁹ Here self-employment tends to reflect unproductive entrepreneurship. The reason for this is straightforward.

Governments can more easily regulate and expropriate large firms with many employees than small, self-employed firms with few employees. The latter find it easier to fly below the state’s radar (de Soto 1989). Because of this, political rules that directly or indirectly tax larger firms and their employees drive a wedge between individuals’ payoff of working for others and their payoff from self-employment.

That wedge can make self-employment more lucrative than working for others even when self-employment creates less social value. An individual may produce less value in self-employment. But (s)he’s able to keep a larger share of what (s)he produces, inducing him/her

⁸For a discussion of this literature, a summary of its basic results, and the theory that underlies them, see Leeson (2008, 2010).

⁹Inferior institutions describe reality in many third world countries. However, developed countries with generally favorable institutional climates may also have inferior institutional elements of such policies, such as excessive taxes and regulations. See, for example, Davis and Henrekson (2010) who highlight the economically deleterious effects of penalizing entrepreneurial wealth creation in Sweden.

to choose self-employment over working for others nonetheless. Thus, compared to under ideal institutions, under inferior institutions there's an "oversupply" of entrepreneurs.

Coyne and Leeson (2004) call entrepreneurial activity that manifests itself in the form of self-employment to circumvent political rules that artificially depress the payoff from employment for others "evasive entrepreneurship". Evasive entrepreneurial activity is often unproductive. It often uses resources in ways that create less social value than alternative uses.¹⁰

The incentives driving evasive entrepreneurs have an important effect on the fraction of self-employed business owners under inferior institutional environments who will become billionaires. Evasive entrepreneurs don't enter self-employment to innovate and grow. Indeed growing would undermine the very reason they enter self-employment in the first place. Therefore few, if any, will create enormous social value. That in turn means that few, if any, will become billionaires.

Further, inferior institutions constrain entrepreneurs' ability and incentive to innovate and grow past some point, even for those whose self-employment is productive and thus capable of creating large social value. For example, with weak private property rights, even the most talented entrepreneurs will find it hard, and often unprofitable, to create large firms. As a result there are fewer billionaires, curtailing entrepreneurs' and society's wealth compared to what they would otherwise enjoy.

2.3 Testable Implications

The foregoing discussion yields several predictions about the relationships we expect to find between economic development, institutions, and entrepreneurship:

First, we expect billionaires to be more prevalent in countries whose institutions are closer to the ideal than in countries whose institutions are further from it and vice versa. In the former countries a larger proportion of entrepreneurial energy is channelled productively.

¹⁰Although the resources that evasive entrepreneurship uses to circumvent political rules that artificially depress the payoff from employment for others are necessary wasted from a social perspective, in the presence of inferior, or "second-best," institutions that create barriers to productive entrepreneurial activity, evasive entrepreneurship may permit value-creating economic activity to take place and in this sense be productive. See, for instance, Rodrik (2008) and Douhan and Henrekson (2010).

Entrepreneurs have stronger incentives to create as much social value as they can. And more persons who found businesses and employ themselves aim to do that. Thus the potential for billionaires is higher.

Second, we expect self-employed entrepreneurs to be more prevalent in countries whose institutions are further from the ideal than in countries whose institutions are closer to it and vice versa. In the former countries a larger proportion of entrepreneurial energy is channeled unproductively. Individuals have stronger incentives to engage in evasive entrepreneurship. Thus the potential for self-employed entrepreneurship is higher.

Third, we expect billionaires to be more prevalent in richer countries than in poorer ones and vice versa. Billionaires create immense wealth. They make the countries they are located in richer. Further, following the logic above, billionaires should be more prominent in countries whose institutional environments are closer to ideal. These are richer ones.

Finally, we expect self-employed entrepreneurs to be more prevalent in poorer countries than in richer ones and vice versa. Evasive entrepreneurs often undermine wealth creation by allocating labor resources to self-employed business ownership that would create more social value in wage labor.¹¹ Further, because self-employed entrepreneurs are oversupplied in countries whose institutional environments are further from the ideal, self-employed entrepreneurs should be more prominent in them. These countries are poorer ones.

3 Data

To explore the relationships between economic development, institutions, and entrepreneurship empirically we use several data sources. We construct a new cross-country dataset on billionaires using *Forbes Magazine's* list of "The World's Billionaires." *Forbes* compiles this list annually. We consider billionaires who appear on *Forbes'* list at least once between 1996 and 2010.

Forbes identifies each billionaire's net worth and country of citizenship. Between 1996 and 2010 this includes 1,723 unique persons. Some of these billionaires aren't entrepreneurs.

¹¹Though, as noted above, under second-best institutions, evasive entrepreneurship may not mean wealth erosion if self-employment permits value-creating economic activity that institutional constraints would otherwise preclude.

They didn't produce their fortunes by starting and growing companies.

Since we're interested only in those who did, we need to identify the subset of these 1,723 billionaires who acquired their fortunes by founding and growing new businesses. To do so we collect information on the source of each billionaire's wealth. *Forbes* often provides this information. When it doesn't, we consult external sources to determine how billionaires made their fortunes.

Most of the world's billionaires, 58 percent, acquired their wealth by starting and growing businesses. This figure is lower in Europe, where only 42 percent of billionaires made their money this way, than in the United States, where 65 percent did so.

Among billionaires who didn't acquire their wealth entrepreneurially, many acquired their wealth through bequests or are CEOs who, though hired by entrepreneurial startups, aren't themselves entrepreneurs. Other non-entrepreneurial billionaires on *Forbes'* list include financial sector traders, law firm partners, entertainers, and wildly successful authors. In rare cases when we couldn't find information about a billionaire's wealth source we coded him/her as a non-entrepreneur. Our results aren't sensitive to including these ambiguous persons in our sample.

After excluding non-entrepreneur billionaires we're left with just under a thousand (996) billionaire entrepreneurs from 51 countries. These billionaires include many archetypical entrepreneurs, such as Bill Gates (Microsoft), Steve Jobs (Apple), Gordon Moore (Intel), Larry Ellison (Oracle), Jeff Bezos (Amazon.com), Larry Page (Google), Warren Buffett (Berkshire Hathaway), Michael Dell (Dell Inc.) and Mark Zuckerberg (Facebook).

We divide the number of billionaires in each country by that country's population in millions using population data for 2009 from the International Monetary Fund (IMF). The resulting variable measures per capita billionaires across countries. The Appendix provides summary statistics for our billionaire variable.¹²

That variable, which aims to measure the prevalence of *productive* billionaire entrepreneurs, is unavoidably imperfect. Although our data exclude non-entrepreneurial billionaires, we're unable to similarly exclude all billionaire entrepreneurs who engaged in unproductive entrepreneurial activity, such as rent seeking, to acquire their wealth. We carefully inspect

¹²A list of the countries in our billionaires sample and their rates of billionaires is available on request.

the billionaires in our data to get a sense of the incidence of “suspicious” billionaires: those whose wealth may reflect significant unproductive entrepreneurial activity. Their incidence is low. In a few instances, such as the case of billionaire government rulers, for example Suharto, Indonesia’s former president, we can confidently exclude billionaires on these grounds. But in most cases we can’t observe to what extent, if any, the billionaires in our data used the political process to help them become super rich.

While it’s important to keep this limitation in mind when considering our results, because most of the billionaires in our data are located in developed countries whose institutional environments do a reasonable job of channelling entrepreneurial activity productively, we can be more confident that our billionaires variable measures productive entrepreneurship as opposed to the unproductive variety. Further, as we discuss below, our results hold when we restrict our sample to OECD countries where our confidence that our billionaires variable measures productive entrepreneurial activity is stronger still.

To construct our self-employed entrepreneur variable we collect data from the OECD (2009), which computes the percentage of each country’s non-agricultural workforce that’s self-employed. The OECD gets its data from the International Labour Organization (ILO). The ILO defines “self-employment jobs” as “jobs where the remuneration is directly dependent upon the profits (or the potential for profits) derived from the goods and services produced (where own consumption is considered to be part of profits). The incumbents make the operational decisions affecting the enterprise, or delegate such decisions while retaining responsibility for the welfare of the enterprise” where “‘enterprise’ includes one-person operations.”

For most countries we consider self-employment rates for the year 2000. When data for this year are unavailable we use data for the most recent available year collected directly from the ILO database. The Appendix provides summary statistics for our self-employed entrepreneur variable.¹³

¹³The list of the countries in our self-employed entrepreneurs sample and their rates of self-employed entrepreneurship is available on request.

4 Empirical Relationships

Our empirical analysis focuses on identifying relationships between economic development, institutions, and different kinds of entrepreneurship across countries in the raw data. We make no attempt to control for other factors that may influence the relationships between these variables.¹⁴ The number of other factors, for example, education, culture, and religion, is large. Further, data availability for the factors we do consider varies. Thus the countries included in our depiction of the relationship between regulatory climates and billionaires' prevalence differ somewhat from the countries included in our depiction of the relationship between property rights security and billionaires' prevalence. Finally, the reader should keep in mind that our approach precludes definitive causal inference.

Despite these limitations, the raw data provide evidence of compelling connections between economic development, institutions, billionaires, and self-employed entrepreneurs consistent with the above reasoning about how these variables may be related.

4.1 Billionaires

Billionaires are distributed unevenly throughout the world. Figure 1 depicts the number of billionaires per million citizens for each country in our sample. In Hong Kong, where billionaires are most prevalent, there are more than 2.8 billionaires per million citizens. In Nigeria, where billionaires are least prevalent among countries that have any billionaires at all, there are fewer than 0.007 billionaires per million citizens.

Figure 2 plots billionaires per million citizens across countries against countries' average income. Our income data measure countries' PPP-adjusted per capita GDPs in 2009. We collect these data from the IMF. The relationship in Figure 2 is strong, positive, and statistically significant. Richer countries have more billionaires. Poorer countries have fewer.¹⁵

Economic theory tells us something about the source of variation in countries' wealth

¹⁴This is a slight overstatement. As we discuss below, in addition to considering each of our relationships using our full sample, we also consider them using a sample that consists only of OECD countries. The latter relationships control crudely for average income.

¹⁵Many countries have no billionaires. Thus in this and our subsequent figures that consider billionaires a cluster of countries appears along the horizontal axis. Our results are robust to, and in fact grow stronger, excluding them.

and poverty. We elaborated that something above: countries' institutional differences. Those differences in turn channel entrepreneurial energy differently. Institutional environments that better protect citizens' private property rights and do less to intervene in the marketplace channel a larger share of their citizens' entrepreneurial energy productively. Thus the fact that billionaires are significantly more prevalent in rich countries strengthens our confidence that our billionaire variable captures productive entrepreneurs.

The reasoning described in Section 2 suggests that billionaires' distribution depends significantly on superior institutional environments' distribution. To examine this connection more directly, we consider the relationship between countries' institutional environments and billionaires' prevalence.

The Fraser Institute produces an index of "economic freedom" that measures the extent to which government protects citizens' private property rights and intervenes in the market across countries. Economic freedom provides a reasonable way of measuring how far various countries' institutional environments are from the ideal environment described in Section 2. We use the Fraser Institute's economic freedom scores for 2008. These scores range from 0 to 10. Countries with higher scores are closer to the ideal. Countries with lower scores are further from it.

Figure 3 plots the rate of billionaires across countries against their economic freedom scores. The relationship in Figure 3 is positive and statistically significant. The correlation between countries' economic freedom and the prevalence of billionaires is 0.46. Countries whose institutional environments are more conducive to productive entrepreneurship have more billionaires. Countries whose institutional environments are less conducive to productive entrepreneurship have fewer.

Economic freedom is a very broad way to measure the extent to which countries' institutional environments deviate from the ideal. It's useful to examine the relationship between variation in particular institutions and variation in billionaires. To do this we first consider countries' regulatory climates. To measure the burden those climates impose on productive entrepreneurial activity we use data from the World Bank's "Ease of Doing Business Index." This index ranks countries according to how conducive their regulatory climate is to doing business in 2008. Lower numbers indicate higher ranks and thus more business-friendly

regulatory climates.

Figure 4 depicts the relationship between countries' regulatory climates and the prevalence of billionaires. The relationship is negative and statistically significant. The correlation between countries' regulatory climates and the prevalence of billionaires is -0.45. Countries with less burdensome business regulatory climates have more billionaires. Countries with more burdensome business regulatory climates have fewer.

Next we consider the relationship between billionaires' prevalence across countries and how well countries protect citizens' private property rights. To do so we use data from the Property Rights Alliance's "International Property Rights Index" (IPRI). The IPRI variable measures the strength of citizens' private property rights in 2010. Property rights' scores range from 0 to 10 where higher scores reflect more secure private property rights.

The reasoning in Section 2 suggests that in countries whose institutional environments protect private property rights better, citizens will devote a larger share of their entrepreneurial energy to productive activities. Thus, consistent with the relationships identified above, we should find more billionaires in countries that score better on IPRI's private property security measure and fewer billionaires in countries that score worse.

We do. Figure 5 presents the relationship between countries' institutional environments in terms of private property security and billionaires. The relationship is positive and statistically significant. The correlation between countries' property security and the prevalence of billionaires is 0.49. Where private property rights are more secure, there are more billionaires. Where those rights are less secure, there are fewer.

Finally, we consider the relationship between billionaires' prevalence across countries and countries' legal origins. As Glaeser and Shleifer (2002) point out, countries with English legal origins have common law traditions. These countries tend to have institutional environments that are more conducive to productive entrepreneurial activity. In common law countries government does more to protect citizens' private property rights; regulatory rules are more business friendly; and the state does less to intervene in the operation of markets.¹⁶

Countries with non-English legal origins have civil law traditions instead. In these countries the situation is reversed from what we describe above. Government does less to protect

¹⁶On the political-economic implications of the common law, see also Hayek (1960).

citizens' private property rights; regulatory rules are less business friendly; and the state intervenes more in the operation of markets. Here the relative payoff of evasive and other forms of unproductive entrepreneurship is higher. We therefore expect to find more billionaires in countries with English legal origins than elsewhere.

To examine this possibility we use data on legal origins from La Porta et al. (1997). These data classify countries according to whether their legal institutions have English, German, Scandinavian, or French origins. La Porta et al.'s legal origins variable covers 47 countries. 28 of these countries are developed. 19 are not.

There are both developed and undeveloped countries with English and French legal origins. However, all countries with German or Scandinavian legal origins are developed. Since billionaires are strongly correlated with average income, it's sensible to limit attention to developed countries in order to better isolate how variation in countries' legal origins, rather than variation in their income, may be related to variation in billionaires' prevalence. The results we present below do this. However, if we consider all 47 countries for which La Porta et al. supply data, our finding remains qualitatively unchanged.

Figure 6 presents the relationship between billionaires and legal origins. As expected, billionaires are more prevalent in common law countries than in civil law ones. Indeed, they are more than twice as prevalent in countries with English legal origins than they are in countries with civil law traditions where billionaires are most prevalent—those with Germanic legal origins. Billionaires are more than five times as prevalent in countries with English legal origins than they are in countries with civil law traditions where billionaires are least prevalent—those with French legal origins.

To ensure that poor countries aren't driving the relationships we find in Figures 2-6 and, closely related, to minimize the possibility that our billionaires variable contains cases of unproductive entrepreneurship, we reconsider each of the relationships considered above restricting our attention to OECD countries only. The results are similar in each case: billionaires are more prevalent in richer countries and countries whose institutional environments better protect citizens' property rights and intervene less in markets. They are less prevalent in poorer countries and countries whose institutional environments do a worse job of protecting citizens' property rights and intervene more in markets.

Taken together the relationships that Figures 2-6 identify suggest two important conclusions. First, our billionaires variable is a good measure of productive entrepreneurship. In institutional environments where we expect productive entrepreneurship to flourish, billionaires flourish. In institutional environments where we expect unproductive, and in particular evasive, entrepreneurship to flourish, billionaires don't.

Second, although our analysis precludes conclusive causal interpretations, billionaires' greater prevalence in countries with superior institutional environments suggests that cross-country variation in how well government protects citizens' property rights but otherwise limits its involvement in the market may be an important determinant of cross-country variation in billionaires. Closely related, billionaires' greater prevalence in richer countries suggests that cross-country variation in billionaires may be an important determinant of cross-country variation in wealth.

4.2 Self-Employed Entrepreneurs

To see how economic development and institutional environments may be related to self-employed entrepreneurs' prevalence, in this section we examine the same sets of relationships we consider above for billionaires but for self-employed persons instead. The data we use and the years our data cover are the same ones we use to examine billionaires. The set of countries depicted in our self-employment figures differs somewhat from that depicted in our billionaires figures since self-employment data and data for our income and institutional variables aren't always available for the same countries they are available for in the case of billionaires.

To anticipate what we find for self-employed entrepreneurs, consider Figure 7. In this figure we depict the relationship between billionaires' prevalence and self-employed entrepreneurs' prevalence across countries. The relationship is negative and statistically significant. Countries with more billionaires have fewer self-employed persons and vice versa.

The pattern in Figure 7 suggests two things. First, billionaires and self-employment measure two different entrepreneurial phenomena. Second, given what we know from above about the relationships between billionaires, per capita income, and institutional environments, the pattern in Figure 7 suggests that the relationships we will find when investigating

self-employed entrepreneurs are likely to be the opposite of the ones we find for billionaires. Since billionaires are associated with richer countries and countries with superior institutional environments, this means self-employed entrepreneurs are likely to be associated with poorer countries and countries with inferior institutional environments. This is precisely what we find.

Like billionaires, self-employed entrepreneurs are distributed unevenly throughout the world. Consider Figure 8. This figure displays how variation in countries' average income is related to variation in the rate of self-employment. The relationship is strong and statistically significant, but negative—the opposite of what we find for billionaires. Poorer countries have more self-employed entrepreneurs. Richer countries have fewer.¹⁷

Investigating the relationship between self-employed entrepreneurs and countries' institutional environments also yields opposite results from what we find for billionaires. Consider Figure 9. This figure depicts the relationship between countries' economic freedom and rate of self-employment. It's strong, negative, and statistically significant. The correlation between countries' economic freedom and rate of self-employment is -0.60.

Next we examine the connection between countries' regulatory climates and their rates of self-employment. Consider Figure 10. This relationship strong and statistically significant. But it's positive—the opposite of what we find when considering billionaires. The correlation between countries' regulatory climates and rate of self-employment is 0.61. Countries with more burdensome regulatory climates have more self-employed entrepreneurs and vice versa.

Similarly, we find the opposite relationship between self-employed entrepreneurs and the security of citizens' property rights that we find for billionaires. Consider Figure 11.

¹⁷Wenneker et al. (2010) suggest that the relationship between “self-employment” and economic development may be U-shaped. That suggestion is misleading. They measure “self-employment” by business ownership and business entry, or start-up rates (and find a U-shaped relationship only in the case of the latter). These variables are of course different from actual self-employment—the rate of non-agricultural self-employment—which is this paper's measure of self-employment. For example, in the U.S. more than a third of business owners aren't employed by their businesses and thus aren't counted as self-employed. Further, some self-employed persons with very small businesses aren't counted as business owners because their businesses are too small. These differences are important. For instance, using business ownership to measure self-employment, Wenneker et al. (2010) find that “self-employment” for the OECD as a whole increased between 1972 and 2007. Using self-employment rates to measure self-employment, we find that self-employment for the OECD as a whole decreased between 1972 and 2007. Although some variables commonly used to proxy self-employment may display a U-shaped relationship to average income, self-employment itself displays a negative relationship.

The relationship is strong, negative, and statistically significant. The correlation between countries' property security and rate of self-employment is -0.58. Where citizens' private property rights are less secure, there are more self-employed entrepreneurs. Where private property rights are more secure, there are fewer.

Finally, in Figure 12 we see how countries' legal origins are related to their rates of self-employment. We again limit our attention to developed countries. And we again find nearly the opposite of what we find when we look at billionaires. With one exception—countries with Scandinavian legal origins—self-employment is less prevalent in common law countries, whose institutional climates are more conducive to productive entrepreneurship, and more prevalent in civil law countries, whose institutional climates are more conducive to evasive and other forms of unproductive entrepreneurship.¹⁸ In countries with French legal origins, where, recall, billionaires are least prevalent, self-employed entrepreneurs are most prevalent. Indeed, self-employed entrepreneurs are 46 percent more prevalent in countries with French legal origins than they are in countries with English legal origins.

As we do for billionaires, we reconsider each of the relationships in Figures 8-12 restricting attention to OECD countries only. The results are again similar: self-employed entrepreneurs are more prevalent in poorer countries and countries with institutional environments that provide worse protection of citizens' property rights and do more to intervene in markets.

Our empirical analysis prevents us from drawing definitive causal inferences. Still, taken together, the results in Figures 8-12 suggest that much self-employed entrepreneurship may be unproductive. As discussed in Section, 2 much of this entrepreneurship may be of the evasive variety. Self-employed entrepreneurship's strong negative relationship with average income and the extent to which institutional environments protect citizens' private property rights and leave markets alone to operate freely—the reverse of what we find for billionaires—are the relationships would expect to find if this was the case.

¹⁸If we consider all 47 countries for which La Porta et al. supply data, countries with French legal origins continue to have the most self-employed entrepreneurs. Countries with Scandinavian legal origins continue to have the fewest. However, but the positions of countries with English legal origins and those with Germanic ones reverse.

5 Concluding Remarks

Our analysis leads to three implications of potential import for policymakers. First, self-employment may be a negative indicator of whether a country's institutional arrangements leverage entrepreneurship for economic progress, not a positive one. We find that self-employed entrepreneurs are associated with poverty, not wealth. Thus policymakers that seek to use self-employed entrepreneurs' prevalence as a gauge for institutional reform may want to think twice before invoking self-employment as a measure of success. Reforms that increase self-employment may be moving a country's institutional environment in the wrong direction rather than the right one from the perspective of economic progress.

Billionaires' prevalence may be a better benchmark for policymakers considering reforms. This variable is positively associated with wealth. Unsurprisingly, it's also positively associated with the institutional environments known to encourage productive entrepreneurial activity and economic prosperity: strong private property rights, low regulation, and light-handed intervention in markets. Thus a reform that leads to an increase in the rate of billionaires or aims to increase that rate is more likely to be one indicative of movement in the right direction from the perspective of economic progress.

Second, our analysis suggests that policymakers interested in promoting entrepreneurship as a means of fostering economic development may do best to focus their attention on the overarching institutions that promote the latter rather than focusing on promoting entrepreneurship *per se*. When growth-enhancing institutions are in place, productive entrepreneurship takes care of itself. As Adam Smith (1776: xliii) put it, "Little else is requisite to carry a state to the highest degree of opulence from the lowest barbarism, but peace, easy taxes, and a tolerable administration of justice; all the rest being brought about by the natural course of things." The key component of "all the rest" that's "brought about the natural course of things" is productive entrepreneurship.

Institutions establish the framework for economic development. Productive entrepreneurial activity is the mechanism whereby that framework produces prosperity. Billionaires' greater prevalence in countries whose institutional environments comport more closely with the ideal and are richer supports this notion. The productive entrepreneurial mechanism is

“automatic” in the presence of institutions that protect property rights and allow markets to operate freely.

This brings us to the final policy relevant implication of our analysis. In the absence of well-protected property rights and light-handed state intervention in markets, policymakers’ efforts to encourage entrepreneurial activity, such as subsidizing business startups, business training/education, or subsidizing small business growth, may create a worse state of affairs from the perspective of economic development than doing nothing at all. At least some such efforts may have the opposite effect of what’s needed. These efforts raise the relative payoff of evasive entrepreneurship, making it even more likely that producers whose social value is higher in wage labor will turn to self-employment where their social value is lower.

Equally important, small business subsidies and related attempts to encourage entrepreneurship directly cost something. The funding for them must be raised by taxing productive entrepreneurs whose property rights to productively generated profit is concomitantly diminished. To the extent that efforts to spark entrepreneurship *per se* in countries that lack the institutional regimes necessary to channel profit seeking in socially productive ways may require additional regulations, for example requirements that compel established business owners to purchase a certain percentage of their inputs from startup firms, targeting entrepreneurship *per se* in such environments adds similarly to the cost of productive entrepreneurial activity.

By imposing additional costs on productive entrepreneurial projects, these efforts discourage the creation and growth of productive businesses, some of which may have produced billionaires. If even one billionaire is prevented from coming into existence as a consequence, the effect on social welfare is enormous. The creation of special programs aimed at boosting entrepreneurship *per se* may also create a new source of rents for unproductive entrepreneurs, sapping social value this way as well.

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Figure 1. Billionaires around the World

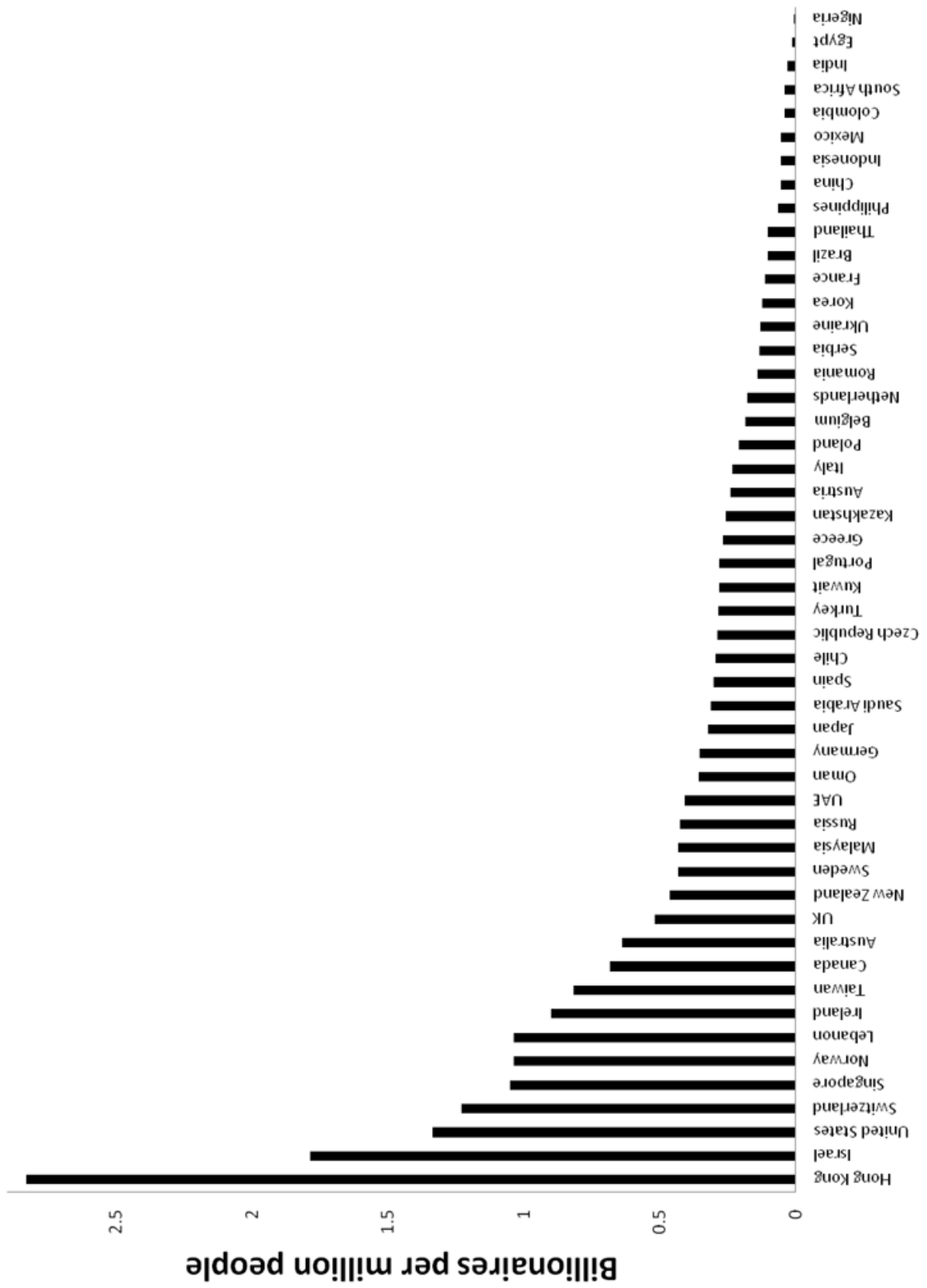


Figure 2. Billionaires and Average Income

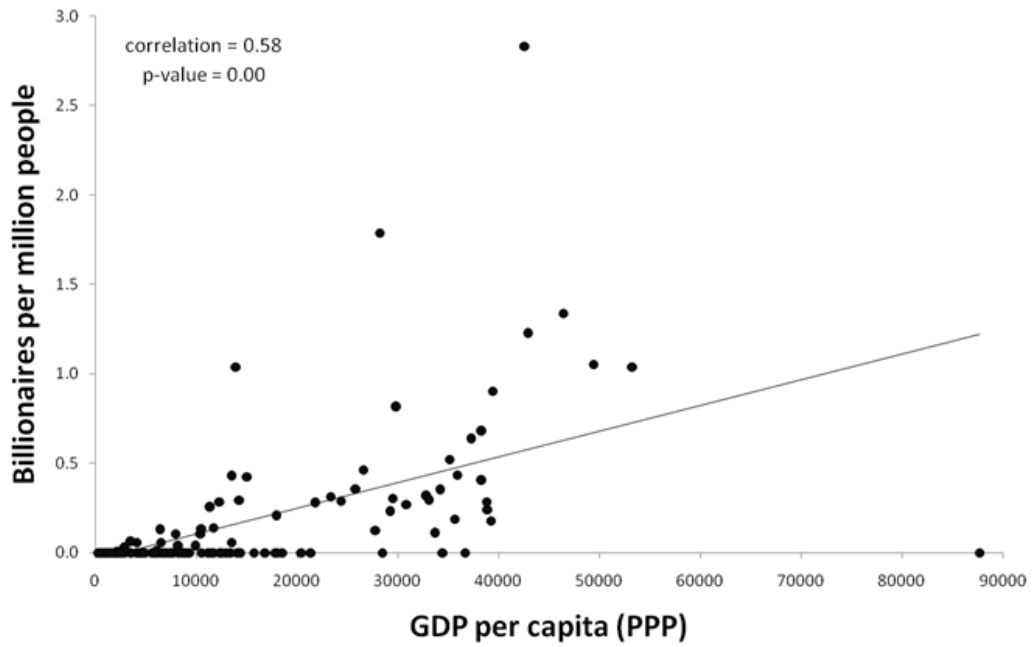


Figure 3. Billionaires and and Economic Freedom

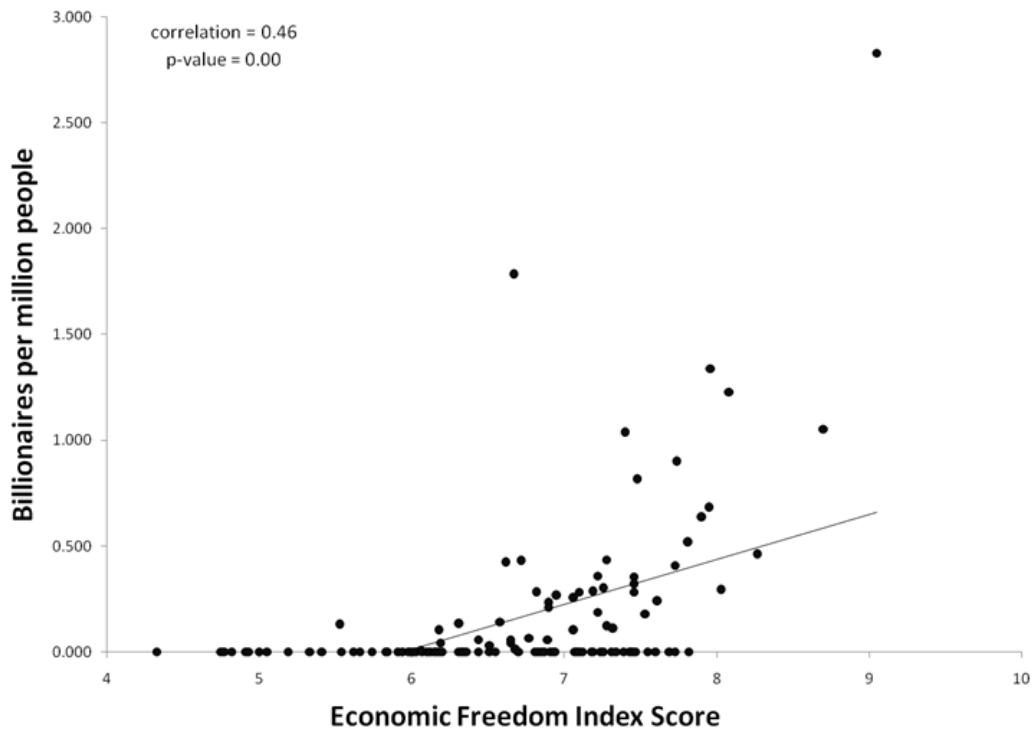


Figure 4. Billionaires and Regulatory Climates

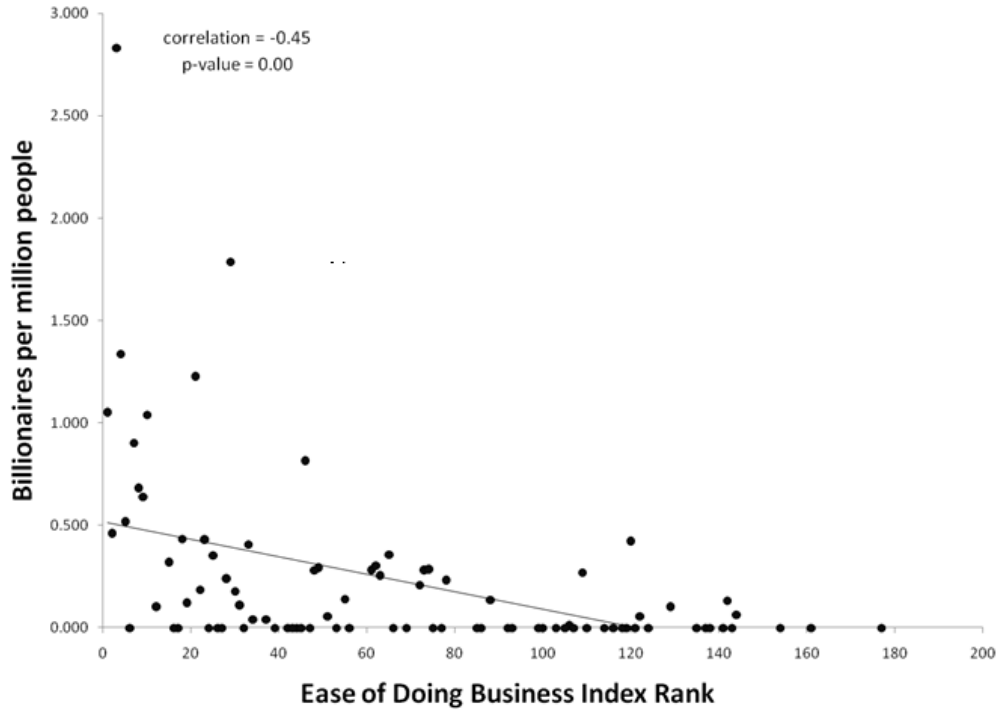


Figure 5. Billionaires and Property Rights Security

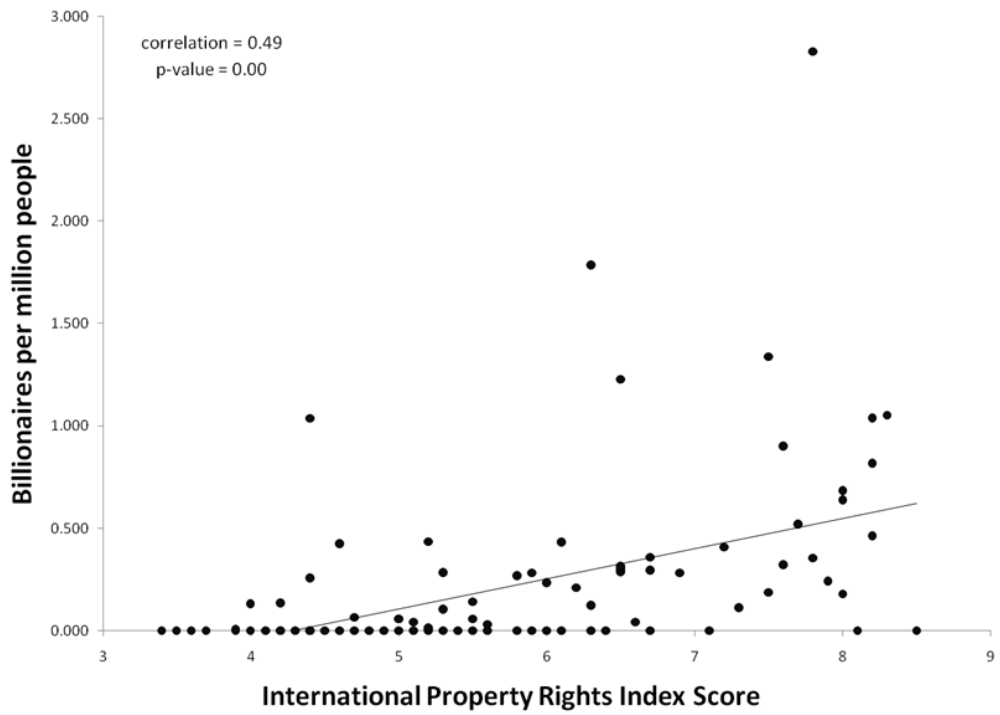


Figure 6. Billionaires and Legal Origins

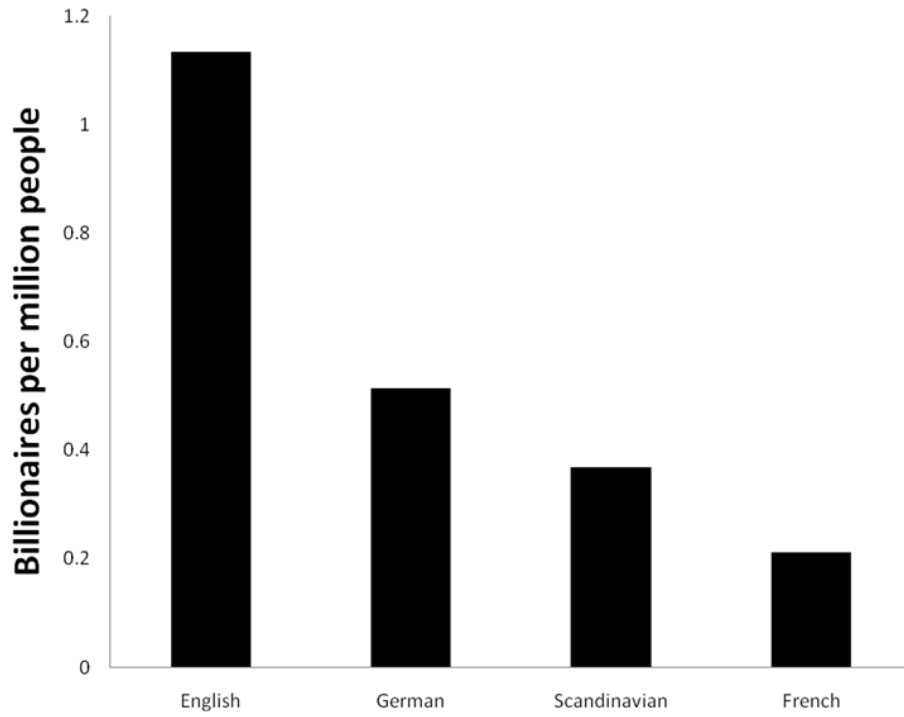


Figure 7. Billionaires and Self-Employed Entrepreneurs

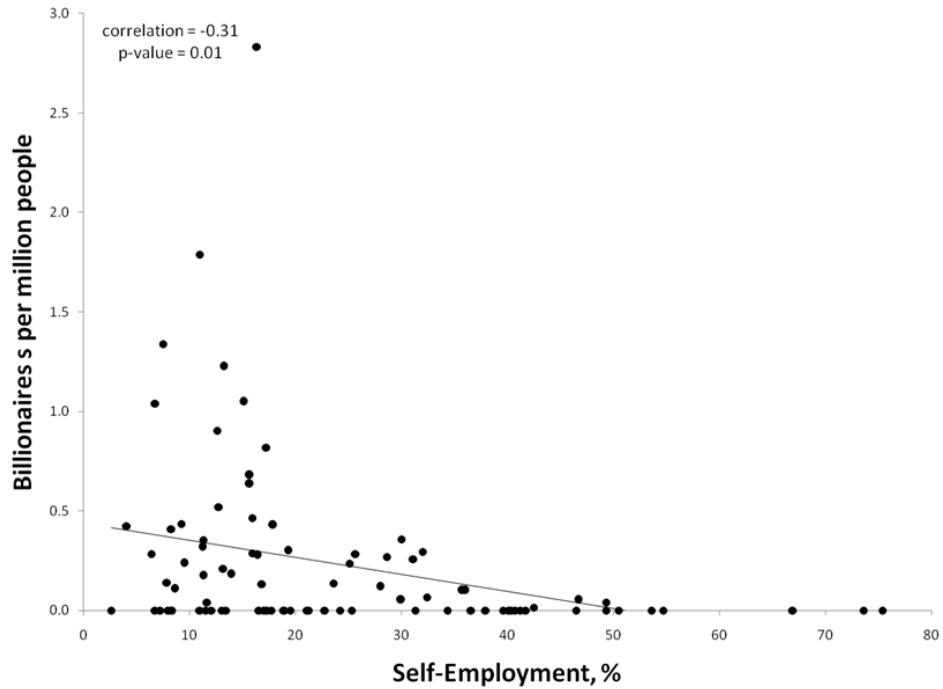


Figure 8. Self-Employed Entrepreneurs and Average Income

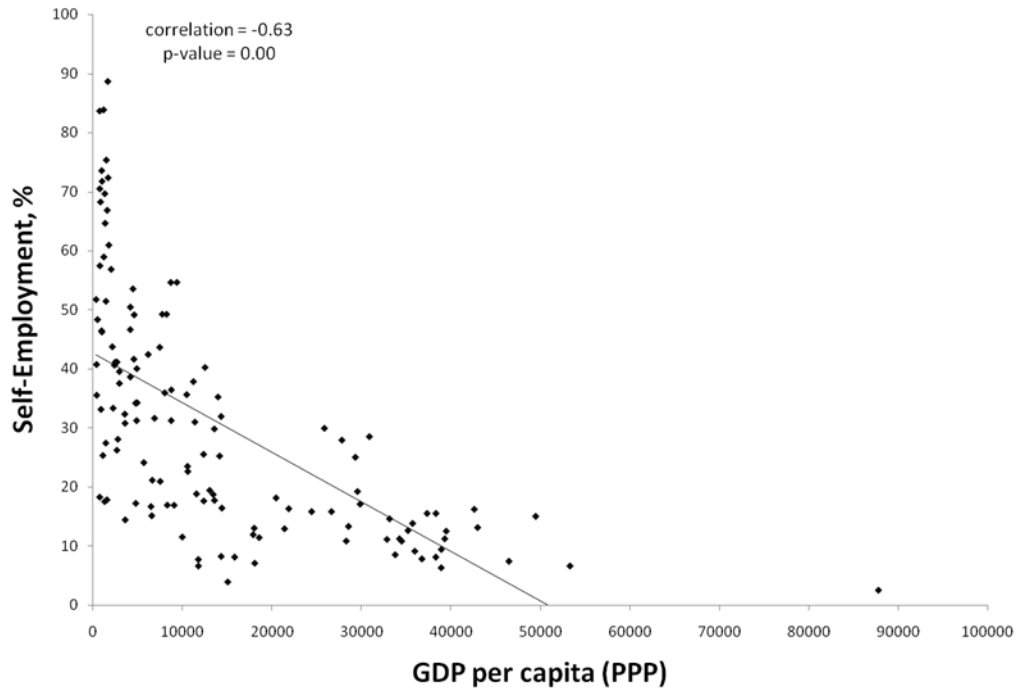


Figure 9. Self-Employed Entrepreneurs and Economic Freedom

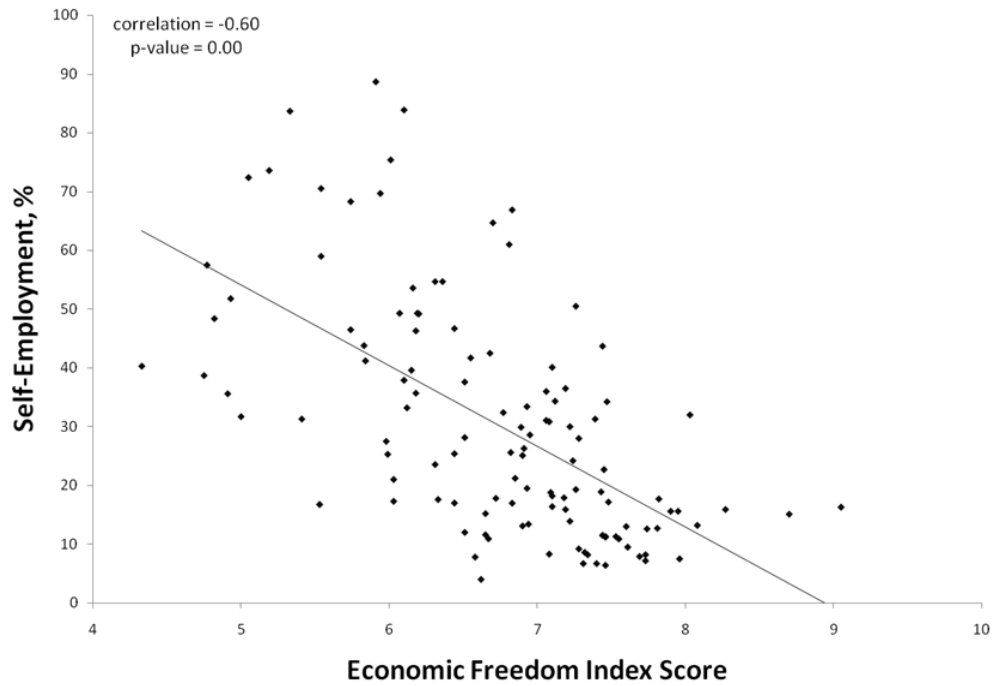


Figure 10. Self-Employed Entrepreneurs and Regulatory Climates

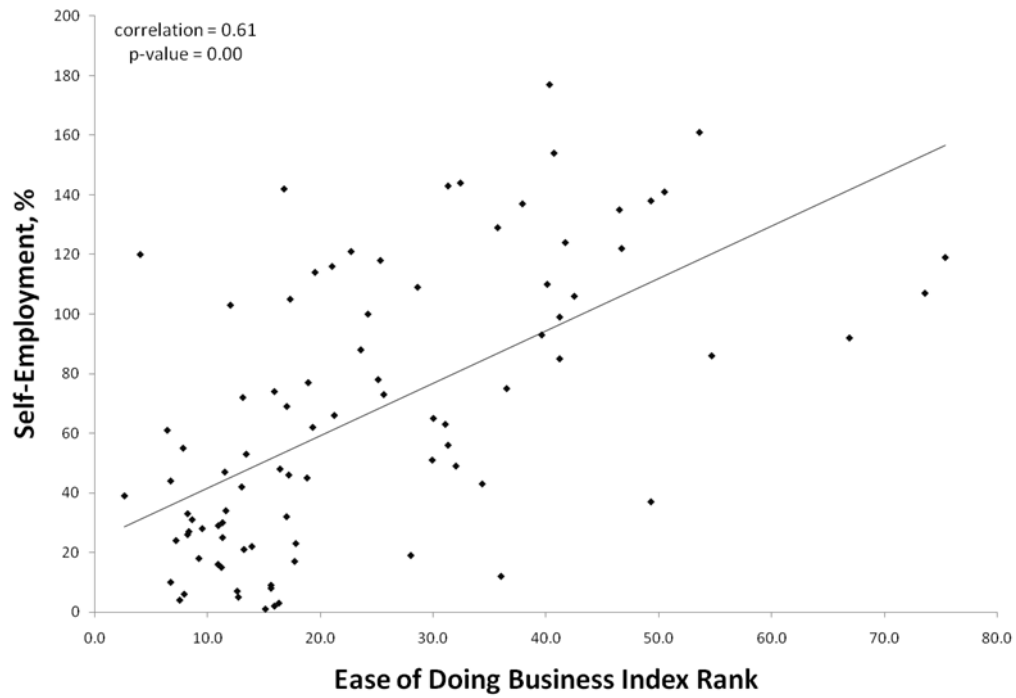


Figure 11. Self-Employed Entrepreneurs and Property Rights Security

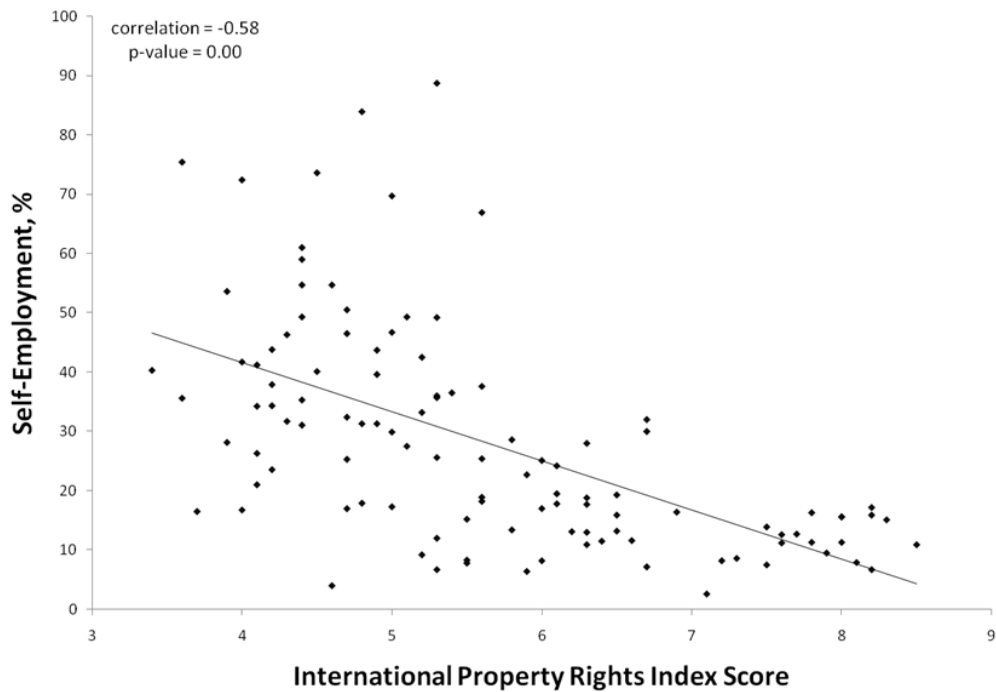
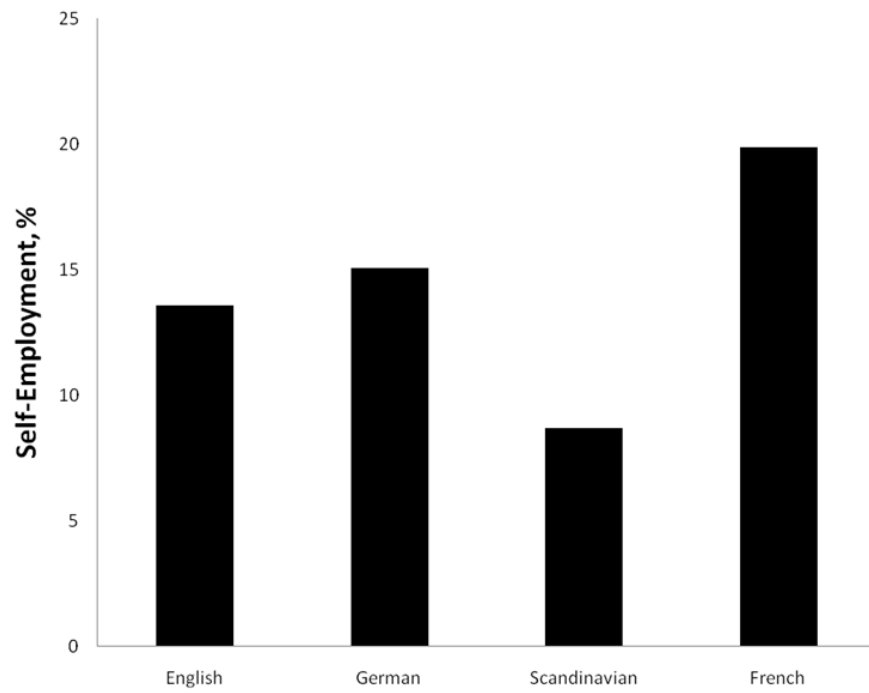


Figure 12. Self-Employed Entrepreneurs and Legal Origins



Appendix

Summary Statistics

	Self-Employment, %	Billionaires per million people
Mean	30.9	0.146
Median	26.9	0
75th percentile	41.7	0.123
Min	2.6	0
Max	88.7	2.830
Standard deviation	20.0	0.380
Observations	130	150