THE FALSE CHOICE OF CUDDLY OR CUT-THROAT CAPITALISM: REGULATION, REDISTRIBUTION AND INNOVATION

Jonathan Hopkin
London School of Economics and Political Science

Victor Lapuente
University of Gothenburg

Lovisa Möller
University of Gothenburg

Abstract

This paper aims to reconcile the anti- and pro-state views of economic dynamism, by distinguishing between the (negative) effects of strict labor, market and financial regulation over innovation and, on the contrary, the (positive) influence of redistributive policies over innovation.

"Growth of output per head determines living standards. Innovation determines the growth of output per head. But what determines innovation?"

Martin Wolf, *Financial Times,* 4-08-2013

1. INTRODUCTION

In line with Martin Wolf, social scientists also see "innovation as a major driver of economic growth" (Murphy et al. 2013, 1; see also Aghion and Howitt 1992, 1997; Acemoglu et al. 2006), and yet we still lack satisfactory explanations of the remarkable "cross-national differences in innovative activity across the industrialized democracies" (Taylor 2004, 601). From a variety of in-depth historical accounts of technological advancements (Edwards 1996, Greif, Iyigun and Sasson 2011, Mokyr 1990, Rosenberg and Birdzell 1986), we know that 'institutions matter' for economic innovation. And, since institutions are probably the only variables with the ability to affect economic agents' incentives for innovative behavior and, at the same time, to vary across countries (Taylor 2004, 604), it is plausible to expect that either particular institutions, "institutional complementarities" (Hall and Gingerich 2009) or "policy choices" (Glaeser et al. 2004, 275) to have systematic positive (negative) effects on innovation.

Nevertheless, the attempts to find those institutions have not been so far very fruitful. We argue, in **Section 2**, that the reason may lie in the fact that research has been torn between two poles. On one extreme, there are theoretically-driven models that classify institutions along one single dimension (market vs state intervention) and, as a result, run the risk of oversimplifying reality. Examples would be the typologies of 'Liberal Market Economies' and 'Coordinated Market Economies' (Hall and Soskice 2001) or of 'Cut-throat Capitalism' and 'Cuddly Capitalism' (Acemoglu, Robinson and Verdier 2012). With very different arguments, both categorizations predict that more pro-market countries (liberal or cut-throat capitalisms) foster more 'radical' innovation than less pro-market countries (coordinated or cuddly capitalism). However, this prediction finds meager empirical support (Taylor 2004, Akkermmans, Castaldi and Los 2009). On the other pole, we have empirically-driven explanations where scores of specific institutions are subject to test without an overarching conceptual or theoretical discussion. For instance, numerous empirical studies have explored the influence of different aspects of employment protection (Acarya et al. 2010; Barbosa and Faria 2011; Estevez-Abe et al. 2007; Griffith and Macartney 2010; Koeniger 2005; Murphy, Siedschlag and McQuinn 2012; Pierre and Scarpetta 2006; Tang 2012, Wasmer 2006), and,

yet, the "empirical evidence on the effects of labor market institutions and labor market reforms on innovation is not clear-cut" (Murphy, Siedschlag and McQuinn 2012, 2). Consequently, policy implications on how governments can foster innovation are difficult to infer from any of those approaches.

This paper aims to bridge the gap between the 'too general' conceptualizations of advanced capitalist democracies – i.e. along the lines of a latent continuum or more or less tendency to use the market – and the 'too particular' analysis of individual policies – e.g. focusing on specific characteristics of employment protection laws. We do so by adopting a half-way approach: we subject to test a more nuanced, and yet parsimonious, conceptualization of policy choices – one that distinguishes between the *regulatory zeal* and the *redistributive zeal* of government. These two distinct types of state intervention in the economy – regulation and redistribution – are often conflated in discussions on the optimal size of the state, yet they are conceptually quite distinct. By jointly testing these two different policy choices, the paper also contributes to the literatures the examine the economic consequences of government regulation (Blanchard and Giavazzi 2003, Djankov et al. 2002, Shleifer 2010, Aghion et al. 2010, Pinotti 2012) and of redistribution (Bergh 2004, Lindert 2004, Lindert 2006, Acemoglu, Robinson and Verdier 2012) by testing both policy choices simultaneously.

Following the literature, this paper argues the policies through which governments regulate how the economic 'cake' can be baked, by whom and under which circumstances, are inextricably related to each other. Countries that tend to regulate labor markets strictly do also tend to regulate product markets strictly. This idea is both anchored in existing theoretical models (Blanchard and Giavazzi 2003) and empirically supported with the principal component analysis presented in **Section 3**. In the same section we also see how a strong regulatory zeal in a country does not need to go hand in hand with a redistributive zeal. These two 'policy choices' are hardly correlated with each other. Among the democratic high-income countries, there are effectively countries where a high regulatory zeal matches high redistribution (e.g. Germany, France), and lower market regulation meets lower redistribution (e.g. US, UK, Switzerland). Yet there are many other countries that do not fit into the one-dimensional view, either because they exhibit high levels of market regulation and low redistribution (e.g. Greece, Japan) or low market regulation and high redistribution (e.g. Denmark, Finland).

We consider that paying attention to these two different dimensions of state intervention offers a sharper understanding of how institutions affect innovation, helping to reconcile the everlasting discussion between negative and the positive views of state intervention in the economy: while one policy choice (i.e. regulatory zeal) has a systematic negative effect on economic innovation, the other (i.e. redistributive zeal) has, if any, a positive effect. As we argue in **Section 4**, in order to innovate, would-be entrepreneurs and other innovators need, first, *negative* freedom or freedom from constraining interferences – i.e. an excessive regulatory zeal. Think of state regulation that prevents outsiders from competing in fair conditions with entrenched insiders in both the labor market (i.e. protected employees) as well as in product markets (i.e. incumbent firms). Heavy regulation can thus be, as argued by public choice scholars (Peltzman 1976, Stigler 1971, Tullock 1967), a rent-seeking mechanism that benefits insiders – either in the labor, product or financial markets. For innovation to take place, the state needs to keep doors open to as many would-be innovators as possible, demolishing entry barriers (Griliches 1984). Our first hypothesis is thus that, ceteris paribus, *the more a government regulates economic activities, the less economic innovation there will be*.

Yet freedom to innovate is not only a matter of how many doors lie open to individuals, but also of the ease with which they can go through them. In other words, it is not only a question of how many opportunities the political and economic institutions create, but also of the capacities they provide for individuals to fulfill their innovative ideas. Actual innovation does not thus depend exclusively on enjoying freedom *from*, but also on enjoying of freedom *to* – that is, what is generally known as positive freedom. The supposition would be that the state, through redistributive policies (e.g. universal health care and education, labor market policies) enables citizens to fulfill those capacities. Consequently, the second hypothesis we will subject to test is that, ceteris paribus, *the more a government redistributes, the more economic innovation there will be*. By testing this hypothesis we will also aim to discern whether there is empirical support for its nemesis – the hypothesis flowing from the different versions of the efficiency-equity trade-off (Okun 1975, Holmstrom 1979): that redistribution, because it distorts incentives, hampers innovation. In other words, we will explore whether the 'empowerment' effects of redistribution outweigh – or are outweighed by – its 'demotivating' effects.

Section 5 presents diverse cross-sectional analyses that indicate a strong negative relationship between regulation and established indicators of economic innovation. The results are robust

to most model specifications, including several standard controls, and using as dependent variables both different proxies for innovation as well as mediating variables (such as female labor employment and quality of government). At the same time, the level of redistribution tends to exhibit a positive effect on economic innovation in most models. In order to address the issue of reverse causality, we undertake a cross-time analysis for the period 1980-2010 that confirms the negative and the positive effects of regulation and redistribution over innovation.

To further address problems of endogeneity, **Section 6** explores an empirical implication of our first hypothesis. Not only should we expect regulation in one sphere (labor) to translate into regulation in another sector (product), as argued by Blanchard and Giavazzi (2003), but, following the literature that has shown strong links between regulatory tendencies and cultural values (e.g. Guiso, Sapienza and Zingales 2006, Aghion et al, 2010, Pinotti 2011), we should expect a higher prevalence of certain cultural values in the countries that regulate more strictly.

From previous research, we know that stricter regulations are highly correlated with low levels of social trust (Aghion et al. 2010). Mistrust leads to demands for more regulation and, since stricter regulation leads to more opportunities for corruption, it ends up generating more mistrust. That is, mistrust and heavy regulation reinforce each other. We aim to identify strict regulation is also inextricably linked to cultural values that can discourage innovative behavior. And that is what we see: countries with high regulation tend to have populations who are *less individualistic* (and more 'statist'), who *trust strangers less*, and who are more *risk averse* (e.g. demand more job security). By both comparing national average responses to World Values Survey (WVS) and the European Values Surveys (EVS) as well as individual data showing how less individualistic and low-trust respondents demand more regulation, we offer an empirical picture of the "regulatory culture" prevalent the countries with highest levels of regulation (e.g. France, Spain, Italy, Greece). On the contrary, other countries –that normally occupy opposite cells in most classifications, such as Sweden and the US – do in fact share an "entrepreneurial culture": their low levels of governmental regulation seems to mirror societies with relatively individualistic, trustworthy, and risk-taking populations.

2. THE INNOVATION OF NATIONS

Most theoretical efforts to classify advanced economies have traditionally been one-dimensional: some countries tend to use the market more than others. This view has been

embodied in well-known dichotomous classifications, such as Ronald Dore's 'Stock Market Capitalism and Welfare Capitalism' (2000), Michel Albert's 'Rhenish' and 'Anglo-Saxon' capitalisms, Roland Bénabou and Jean Tirole's (2006) 'American equilibrium' versus 'European equilibrium'. Two of those dichotomies have been argued to have a direct impact on cross-national differences in innovation: Hall and Soskice's (2001) 'Liberal Market Economies' (LME) vs. 'Coordinated Market Economies' (CME); and Acemoglu, Robinson and Verdier's (2012) 'Cut-throat Capitalism' vs. 'Cuddly Capitalism'.

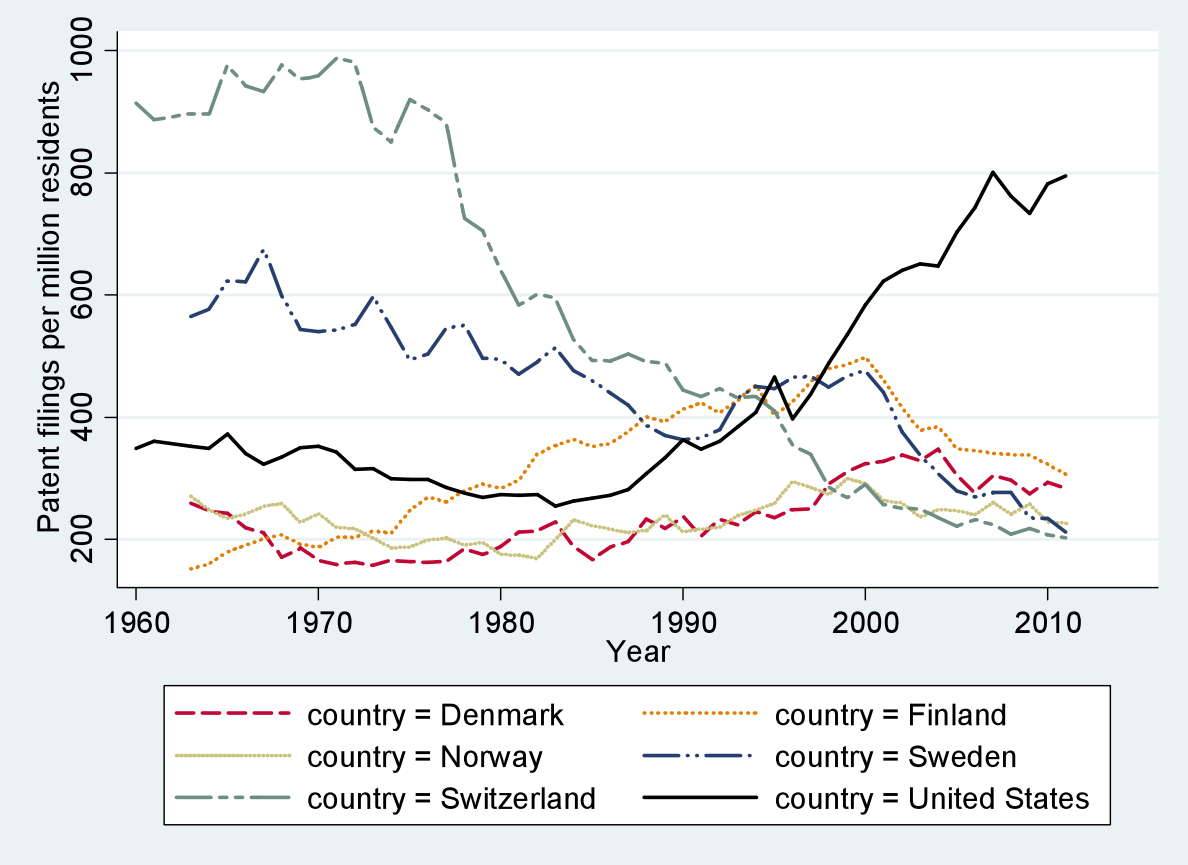
Their theoretical mechanisms are different, but the predictions similar: LME or cut-throat capitalism leads to more 'radical' innovation than CME or cuddly capitalism – that, in turn, may excel at 'incremental' innovation. The alleged lack of radical innovation in CME (e.g. Germany, Scandinavian countries) could be due to the motivational disincentives of welfare generosity – aka the "Europeans work less" (Acemoglu, Robinson and Verdier, 2012, 8)[1] – or to the inherent lack of flexibility of labor employment laws devised to sustain high degrees of coordination in the industrial-relations systems (Hall and Soskice 2001). Nevertheless, this prediction does not seem to survive serious empirical scrutiny.

In the first place, encompassing empirical tests of Hall and Soskice's (2001) classification have found no support for their explanation of cross-national innovation patterns (Taylor 2004, Akkermmans, Castaldi and Los 2009). Similarly, the empirical indications of the innovation payoffs that cut-throat capitalist countries obtain because they "sacrifice insurance and equality" (Acemoglu, Robinson and Verdier 2012, 5) are not convincing. Acemoglu, Robinson and Verdier claim that the United States is "widely viewed as a more innovative economy" (*ibid*, 1) and back this up with the fact that Scandinavian countries lag behind the United States in patent filings per million residents since 1995.[2] As figure 1 shows, if we expand the period of study a few more decades, two 'cuddly' capitalist economies – Sweden and Switzerland – have actually had more patent filings per resident than the US for most of the latest half century. Consequently, from a narrative linking recent America's supremacy in patent filings to its high-powered incentives, one should derive that Sweden – precisely during the decades of uninterrupted Social Democratic rule – provided greater incentives than the United States. Otherwise, the relationship between economic innovation and state

[1] For variations of this argument, see Acemoglu and Pishcke (1998), Piketty (1995) or Bénabou and Tirole (2006).
[2] It is important to note yet that 1995, the year chosen to start the comparison by ARV without a clear justification, conveniently coincides with the boom of the internet era.

interventionism may be more complex than the conventional view in many economic models would state.

FIGURE 1 *Patent filings per million residents at domestic office*



Note: Patent filings in the United States are compared with patent filings in the five countries that Acemoglu, Robinson and Verdier point out as countries of 'cuddly capitalism' in their two versions of their 2012 paper. The argument that the United States has more patent filings than countries with 'cuddly capitalism' does not hold when expanding the time scope beyond the boom of the internet era.

Source: The author's own calculation based on patent application and population data from the World Bank (database: World Development Indicators, indicators: IP.PAT.RESD and SP.POP.TOTL).

Further, the recent growth in patent filings in the United States is not timed as a clear response to an increase in inequality. However, when analyzing the patent filings, information and communications technology (ICT) patents have been the single most important factor for the increasing patent filings displayed in figure 1. By the year 2000, almost every other American patent filed under the US Patent and Trademark Office (USPTO) was related to the ICT sector. The fact that the fundamental innovations which has constituted the basis for this boom, such as the new communications technologies, the GPS and the internet itself, are all partly the outcome of immense publicly funded research (Mazzucato 2013:88), casts further doubt on that cut-throat incentives is the simple prescription for innovation.

What has been labeled as the Nordic model (Sapir 2006, 380) has drawn lots of attention – both within and outside the academia – because of its, to a certain extent, *contra natura*, combination of economic innovation and redistribution. In fact, the Nordic countries seem to exhibit a 'trade-in' between efficiency and equity (Hopkin and Blyth 2012). An indication that Scandinavia represents a challenge to the prevailing 'trade-off view' in most conventional accounts is that it tends to be explained through metaphors. For instance, Sweden's Prime Minister Göran Persson compared the country's economy to a "bumblebee. With its overly heavy body and little wings, supposedly it should not fly – but it does… This is how so-called analysts view the Swedish economy. We 'defy gravity'. We have high taxes and a large public sector, and yet, Sweden reaches new heights" (quoted in Lindert 2006, 237). José Ángel Gurría, OECD secretary general, regarded the Swedish economy as "strong like Pippi Longstocking" in 2011.[3]

The indications that Scandinavia represents a challenge to the prevailing 'trade-off view', at the same time as the United States is indeed succeeding in terms of innovation, leads us to conclude that the effect of redistribution on innovation might be more complex than the work on ARV (2012) indicates. Further, an analysis of the 'passive' or 'active' state might require broader conceptualization of policy choices, in order to provide a more holistic understanding of the innovation of nations. One dimension does not seem to catch all. Next, we turn to mapping two key policy choices within political economy, market regulation and redistribution, in order to facilitate an analysis of the level of innovation of technically advanced economies.

3. MAPPING MARKET REGULATION AND REDISTRIBUTION

It has been claimed theoretically (Blanchard and Giavazzi 2003) and empirically (Hopkin and Blyth 2012) that countries that regulate the financial sector heavily tend to also exhibit high levels of labor and product regulation. Similar to the latter, we present here a principal-component analysis that shows the robustness of these clusters of regulatory policy choices.

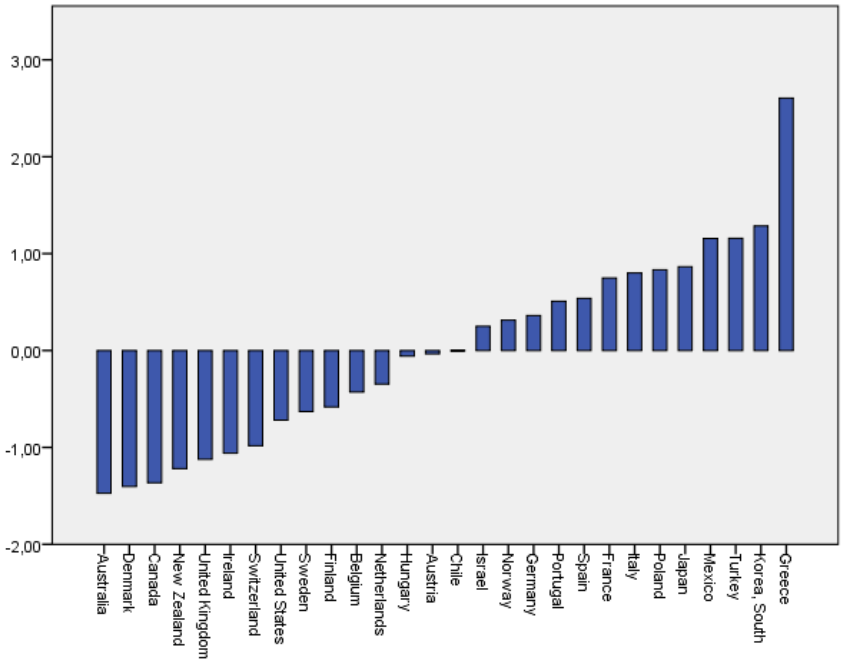
It is important to remark that, though there has been a significant increase of cross-national indicators of market regulation and red-tape since the beginning of the millennium, these are

[3] One decade earlier, *Forbes Magazine* had defined Sweden as "people's republic of entrepreneurs", noting the peculiar mixture between a "cradle-to-grave security" – paired with very high taxes –and a thriving economy, the productivity of which had increased 47 percent from 1990 to 1999, against 39 and 31 percent in the US and the EU average, respectively.

not exempt of measurement problems. In order to minimize these problems, we employ the same strategy as Hopkin and Blyth (2012), and base our estimate of the regulation of markets on a wide range of measurements produced by the World Bank, the Organisation for Economic Co-operation and Development (OECD) and the Heritage Foundation; using the latest available data for each measurement. A full data specification is available in the appendix. The regulatory arrangements of 28 OECD countries[4] are analyzed. By applying principal component analysis to these measurements, a clear relationship between measurements such as the level of employment rigidity, the number of steps needed to open a new business and openness to foreign investors is displayed. The extracted factor captures 43.7 % of the variance in the regulations measurements. Similar to Hopkin and Blyth (2012), we can thus see that there is a latent variable of 'tendency towards market regulation' or 'regulatory zeal' across OECD countries – a variable that we also interpret as a proxy for the tendency a state has to apply regulation of markets that protects well-located insiders in the labor, product and financial markets at the expense of outsides. The analysis indicates that Anglo-Saxon and the Scandinavian countries do in fact have a similar tendency towards regulation, when all three aspects of economic market regulation are taken into account.

FIGURE 2 *Index of market regulation*

[4] The OECD members with a state formation in the 1990's were excluded from the sample, as their market regulations cannot be conceptualized as having been shaped by an interplay between institutions and values in a democratic process over time. This is required for our analysis of values is section 6. The two OECD members with less than half a million citizens were also excluded from our sample.



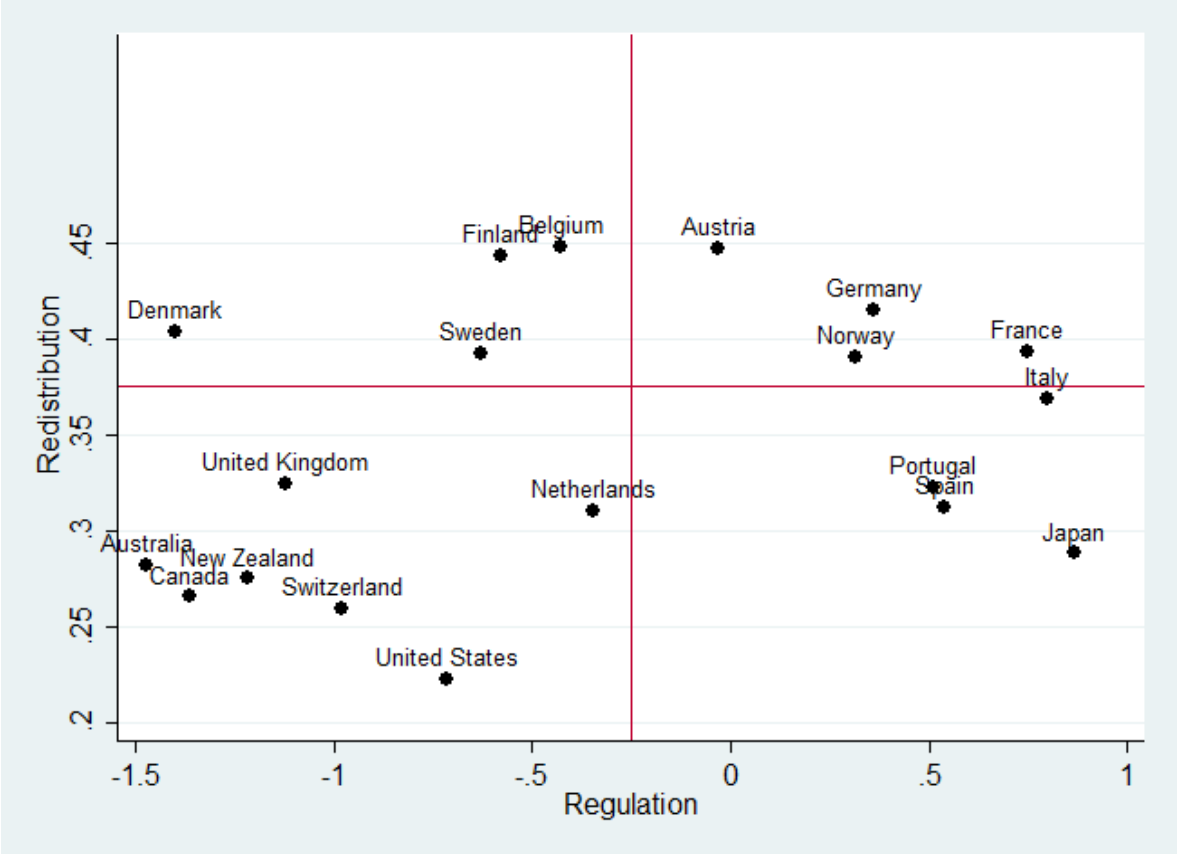
Notes. The results from PCA analysis of market regulation (one factor extracted) are displayed. Higher values indicate a higher level of regulation. Variance explained: 43.7%, Kaiser-Meyer-Olkin Measure of Sampling Adequacy: 0.733. Nine regulation variables measuring different aspects of labor, product and financial market regulation were included in the PCA analysis, all listed in the appendix. The value 1 on the regulation scale indicates that the country's level of regulation is one standard deviation above the mean in the sample.

When it comes to elucidate which countries redistribute more than others, the literature has noted the shortcomings of the existing attempts to capture 'clustering' among different welfare-state programs (Scruggs and Allan 2006). Simple budgetary measures, such as the percentage of social expenditure, despite their simplicity and availability, are subject to other problems: in extraordinary economic times, they may seem to be 'improving' – when governments may actually be engaged in active policy action to reduce social entitlements – just because the number of recipients is rising with unemployment; in normal economic times, social expenditure may cover policies aimed to satisfy core constituencies or particularistic interests. Consequently, the probably less problematic way to capture countries' redistributive zeal is to look at their governments' ability to reduce the economic differences created in the market economy, as is becoming the standard in the literature (e.g. Iversen and Soskice 2006, Pontusson and Rueda 2012). The redistributive capacity of a government would be the result of comparing the inequality levels before and after taxes and transfers.[5]

[5] Data from the OECD available here: http://stats.oecd.org/Index.aspx?DatasetCode=INEQUALITY

Figure 3 graphs the indicators of regulatory and redistributive policy choices. It shows a great deal of heterogeneity of policy combinations across industrialized nations. There are countries with high regulation and redistribution (core CMEs like Germany, Norway and Austria, together with France), with low regulation and redistribution (Anglo-Saxon countries and Switzerland); with high regulation but low redistribution (Southern Europe plus other peripheral OECD economies and Japan); and with low regulation and high redistribution (e.g. most Scandinavian countries).That is, to the very least, this visualization – which could have been replicated with other proxies (e.g. specific components of the regulation index or alternative measures of welfare generosity) – questions the clustering of countries in either two groups of pro-market vs. pro-coordination economies or along the continuum of the 45degree line.

FIGURE 3**.** *Varieties of Regulation and Redistribution*



Notes: In order to facilitate a comparison between the Varieties of Capitalism (VoC) classification and our measurements of policy choices, the levels of redistribution and market regulation are illustrated for the richer OECD members. No statistically significant correlation between the two policy choices is to be found, neither for the richer OECD members that the VoC literature covers, nor for our larger sample.

Sources: Regulation the PCA analysis result of nine regulation variables measuring different aspects of labor, product and financial market regulation (a more detailed description is available in the appendix). Redistribution

is the reduction in inequality caused by taxes and transfers, in percent, data from the OCED Dataset Income distribution – Inequality. The data refers to the late 00's.

4. HYPOTHESES: EFFECTS OF REGULATION AND REDISTRIBUTION ON INNOVATION

How do these two different policy choices (regulation and redistribution), that seem to be relatively independent from each other, do affect economic innovation? This section presents some hypotheses based upon theoretical arguments from diverse literatures that may help us understanding how states affect innovation by analyzing how regulation and redistribution adjust opportunities, incentives and limitations in the economic game.

We mostly rely on two different strands of research. First, well-known arguments that link high levels of regulation to worse economic outcomes (Tullock 1967, Stigler 1971, Peltzman 1976, Aghion et al 2010, Pinotti 2012); and, second, the also numerous authors that see a positive role of government redistribution for economic innovation (Barr 1993, 2003; Greif, Iyigun, Sasson 2011). Far from being mutually exclusive, these arguments may reinforce each other if we take the broader perspective that political theory may offer us. In particular, the extensively discussed distinction between negative and positive freedom (e.g. Berlin 1958, Putterman 2006, Petit 2008) may help us better understand the need for low levels of regulation, as well as offering an explanation to why redistribution might sometimes have a positive effect on innovation.

Following the public choice tradition (e.g. Buchanan and Tullock 1962, Tullock 1967, Stigler 1971, Peltzman 1976) one can define heavy "regulation [as] a rent-seeking device benefiting a restricted group of insiders" (Pinotti 2012, 650). Through regulating labor, product and financial markets, governments are deciding who can play – i.e. the insiders – and who cannot play – i.e. outsiders. The more governments regulate, the more they are protecting a group of entrenched insiders – e.g. unionized, generally male, workers in the labor market; incumbent firms in the product and financial markets – at the expense of outsiders. Therefore, while all societies need a minimal regulation, heavy regulation[6] has been found as benefiting some (i.e. insiders) at the expense of social welfare (Djankov et al. 2002).

Even if we assumed that strict economic regulations have been devised by benevolent policy-makers (instead of rent-seekers), they could be hampering innovation in a society. Political

[6] Using Bozeman's (1993) terminology, all governmental activity necessarily produces "white tape", but, on the top of that, some also produce "red tape" that does not contribute to social welfare. And it is this "red tape" what the scholars referred here equate with "heavy regulation".

philosophers have for long linked negative freedom – i.e. absence of economic regulations, beyond a limited minimum – to prosperity. Isaiah Berlin (1958) collects these ideas in this famous essay *The Two Concepts of Liberty*: "[Mill] declares that unless men are left to live as they wish 'in the path that merely concerns themselves', civilization cannot advance; the truth will not, for lack of a free market of ideas, comet to light; there will no scope for spontaneity, originality, genius, for mental energy, for moral courage. Society will be crushed by the weight of 'collective mediocrity'" (*ibid*, 158). Consequently, Berlin reasons, societal progress crucially depends on "the 'negative' goal of warding off interference", no matter "how benevolent the motives" of those who block before you "every door but one" (*ibid*.).

In sum, whether assuming a rent-seeking or a benevolent ruler, it is plausible to expect a negative effect of regulation over economic innovation in a country. Our first hypothesis would thus be that, ceteris paribus, and beyond a Pareto optimal minimal level of regulation,[7] the *stricter government regulation of labor, product and financial markets,* the *less economic innovation there will be.*

Yet, the ability to innovate does not only depend on how many opportunities are available. Innovation may depend on both freedom *from* state regulation as well as on freedom *to* (i.e. positive freedom) pursue ideas. For Berlin (1969, 131), positive freedom would be the capacity "to be somebody, not nobody; a doer - deciding, not being decided for, self-directed ... conceiving goals and policies of (one's) own and realizing them" and to "be conscious of (oneself) as a thinking, willing, active being, bearing responsibility for (one's) choices and able to explain them by reference to (one's) own ideas and purposes". These human activities seem essential for any innovative economic activity to take place and, unlike in the negative freedom, the fulfillment of positive freedom may require an active state intervention.

This has been noted by some economists. As Dasgupta (1986, 26) reasons, "there is another type of liberty, of the positive form (Berlin (1969)) whose promotion requires each person to have access to and command over certain commodities and resources, the most important of which are precisely those the Welfare State has traditionally been urged to make available". Positive freedom concerns "the ability of a person to function" (*ibid*, 28) and thus it requires a state that, to the very least covers what has been known as "basic needs" (Streeten 1981) – that is, "basic food and shelter, medical care, primary education and sanitation facilities"

[7] Since this paper focuses exclusively on OECD countries, the 'regulatory starting point' is not nil, but an optimal minimal level of market regulation. In our data this Australia, that comes out as the country with the lowest level of market regulation in our analysis.

(Dasgupta 1986, 29). Those countries capable of providing those basic goods to a broader fraction of the population at the highest quality – through redistribution – would thus be promoting positive freedom to a larger extent that those countries where these basic goods are provided to a restricted number of citizens.

Many scholars have since produced both theoretical reasons as well as empirical evidence to interpret redistributive policies as redistributing human capital (e.g. a healthier, better prepared population) and thus economic opportunities **(eg Stiglitz, Barr)** Similarly, following the empirical observation by Hopkin and Blyth (2012) that in some countries (e.g. Nordic) there seems to exist a "trade-in" between efficiency and equity, we will subject to test a second hypothesis: *ceteris paribus, government redistribution fosters the levels of economic innovation in a country.*

Conversely, by testing a 'trade-in' hypothesis, we will also be testing the more conventional 'trade-off' hypothesis, the one ingrained in the incentive-insurance trade-off (Holmstrom 1979) or equity-efficiency trade-off (Okun 1975). This trade-off is implicit in Acemoglu, Robinson and Verdier's (2012) explanation of cross-national differences in innovation: if a country chooses cut-throat capitalism [cuddly capitalism], it will get efficiency [equality] gains at the expense of equality [efficiency]. Greater innovation will come at the cost of a weaker safety net and therefore higher inequality. This assumption is ingrained in many influential theoretical models. Explaining how their "model works", Bénabou and Tirole (2006, 1) state that "when people anticipate little redistribution, the value of a proper motivation is much higher than with a generous safety net and high taxes". This hypothesis (the third we will explore) thus suggests that *ceteris paribus, government redistribution hampers the levels of economic innovation in a country.*

5A. CROSS-SECTION EVIDENCE

Our initial part of the empirical analysis makes use of the extensive analyses of innovative performance in the recent years leading up to rankings of countries by their levels of innovation and global competiveness. If market regulation and economic redistribution does affect innovation levels, we should be able to establish a general pattern between levels of these two zeals and the estimates of the countries innovative strength.

We explore the effects of the regulatory and redistributive zeals mapped out in section 3 over two types of proxies for economic dynamism. We make use of two indicators aimed at directly capturing a country's level of innovation: the *Global Innovation Index* and the *Global Competitiveness Index*. The *Global Innovation Index* is produced by jointly by the Insead and the World Intellectual Property Organization. The organizations recognized the need for an indicator that could work as a bench-marking tool to evaluate the innovational progress of nations. The measurement goes beyond what has been previously available to the research community as proxies for innovation, such as research and development funding (which is merely measuring an input to innovation). The index constitutes of two sub-indexes, capturing a wide range of indicators of the input side to innovation and the output side to innovation respectively. The *Global Competitiveness Index* is the basis of the ranking of countries in the World Economic Forum's Global Competiveness Report. The World Economic forum bases its analysis on twelve areas which have been found to affect how productively a country can make use of its resources, or in other words, how globally competitive a certain country is. The *Global Innovation Index* constitutes our main dependent variable, as it benchmarks countries on innovation specifically. In one of our models, it is replaced with the *Global Competiveness Index* as a test of the robustness of the results. [8]

We preform multivariate regressions to test the effect of regulatory and redistributive zeals on innovation. We also expand our test of the effect of redistribution, by exchanging our redistribution measurement for the size of the government expenditure and the inequality proxied by the GINI coefficient. This is to test whether a higher government expenditure or absence of inequality might have overall negative effects on innovation levels. Further controls included are gross domestic product per capita and research and development investments. By including GDP, we control for that the richer countries in the sample have more resources which could be aimed at innovation. And as research and development investments has been proposed to contribute to the latest innovation boom in the United States, as well as being so closely related with innovation that it is often used as a proxy for the innovation outcome itself, this is an important and tough control for our other measures. The results of OLS estimates are presented in table 1 and descriptive statistics and bivariate correlations are available in the appendix.

[8] A more detailed description of the methodology of the two indexes is available in the reports, which are freely available on the organizations' respective webpages: www.globalinnovationindex.org/ and www.weforum.org/issues/global-competitiveness

The first column indicates that both regulation and redistribution are linked to innovation. Just like the literature predicts, market regulation has a negative effect on innovation levels, which is robust even controlling for GDP per capita and R&D expenditure. Under the control for redistribution, wealth and R&D funding (model 2), our model still predicts that an decrease in red-tape by one standard deviation will correspond to a incensement of almost 4 scores in the Global Innovation Index, this coefficient being precisely estimated. Quite a significant improvement, as this would involve climbing five places on the world ranking, taking the OECD average as a starting point. We thus find that there is strong support for our first hypothesis: market regulation lessens economic innovation.

TABLE 1 *Regressions (OLS) exploring the links between regulation, redistribution and innovation.*

	Dependent variable: The Global Innovation Index				Dependent variable: GCI
VARIABLES	(1)	(2)	(3)	(4)	(5)
Regulation	-6.117***	-3.914***	-3.825***	-4.075***	-0.312***
	(1.268)	(0.853)	(0.872)	(0.831)	(0.0769)
Redistribution	19.95*	5.050			0.473
	(10.92)	(7.037)			(0.662)
Government Expenditure			0.107		
			(0.0913)		
Inequality				-20.27	
				(14.16)	
GDP p.c.		0.000129***	0.000137***	0.000108**	
		(4.54e-05)	(4.39e-05)	(4.67e-05)	
R&D		3.610***	3.652***	3.407***	
		(0.733)	(0.756)	(0.727)	
Constant	46.10***	37.76***	33.94***	47.09***	4.881***
	(3.537)	(2.443)	(4.560)	(6.122)	(0.214)
Observations	27	27	26	27	27
Adjusted R-squared	0.544	0.839	0.838	0.849	0.404

Notes. The results from OLS regressions are displayed. The main dependent variable is the Global Innovation Index (GII) 2012 (source: Insead and World Intellectual Property Organization's report The Global Innovation Index 2012). The Global Competitiveness Index (GCI) 2012-2013 is used as an alternative dependent variable in model 5 (source: The World Economic Forum's Global Competitiveness Report 2012–2013). The regulation variable is the result of a principal component analysis of nine regulation measurements; a detailed description of the variables employed in the PCA is provided in the Appendix. The redistribution variable is the percentage reduction in GINI coefficient due to taxes and transfers in the late 2000's (source: the OECD Dataset Income distribution – Inequality). Government expenditure is the Total general government expenditure as percentage of GDP (source: the OECD National Accounts at a Glance 2013, Table 16.1). The Government expenditure data refers to the year 2010, except for Australia and New Zealand where the most recent data available, year 2009, is used instead. Government expenditure data for Chile is missing, which limits the number of observations in model 3. Inequality is the GINI coefficient after taxes and transfers in the late 2000's (source: the OECD Dataset Income distribution – Inequality). GDP is the Gross Domestic Product per capita in current US$ year 2011 (source: the World Bank World Development Indicators database). The R&D variable a measurement of public and private expenditures for research and development as percentage of GDP (source: the World Bank World Development Indicators database). The R&D data refers to the year 2010, or the most recent data available. Due to lack of more current data, the Australia, Japan, Mexico, New Zealand & the United States data refers to the year 2009; Chile & Switzerland data refers to the year 2008; Greece data refers to the year 2007. Standard errors in parentheses. Coefficient is statistically different from 0 at the *** .01, ** .05, and * .10 levels.

The first OLS estimates show that redistribution seems to have a positive effect on state innovation levels. However, this effect is no longer statistically significant when controlling for GDP per capita and R&D expenditure. In order to contrast the effect of redistribution from just having a high level of government expenditure, redistribution is replaced with the latter in column 3. As to be expected, the positive effect on innovation diminishes. Whether or not government expenditure manages to reduce inequality, and thereby enhance the positive freedom, appears to determine the effect on innovation, not the size of the state per se. The more unequal countries in our sample generally also have a lower wealth level and less research and development expenditures.[9] However, even when we control for the GDP level and R&D expenditure, there is still no positive linkage between higher inequality and innovation (model 4).

Another widely used measurement for innovation is the input to the process; inventions. In order to put the robustness of our results to the test, we make use of this method to map if the results hold. Further, we are interested in testing the ability of the nations to foster radical innovation specifically, and we will therefore put our focus on the most influential patents.

A patent is a document providing the exclusive right to prevent other actors from producing or using a specific new device for a fixed time period. In Schumpeter's (1911) classic theory of economic development, invention is part of the concept of innovation, though for it to be an innovation, market introduction is required. Patent filings can be rejected, an approved patent might never be transformed into products and organizational breakthroughs in process innovation are largely missed by using patents as a proxy for innovation. None the less, when used correctly, patenting statistics has been found to constitute a good indicator of inventive activity and an acceptable, though rough, measurement of the innovation of nations over a longer period of time.[10]

As the grant rate of patents vary widely between countries (Griliches 1998) we put our attention to the filings made at the U.S. Patent and Trademark Office (USPTO) and we only include granted patent filings in our analysis. As we aim to analyze the top patents, inventions

[9] A full account of all bivariate correlations among the variables is available in the appendix.
[10] For a more elaborate evaluation of the use of patent statistics as a proxy for innovation, see Becheikh, Landry & Amara 2006, Griliches 1984, 1998, Hall, Jaffe & Trajtenberg 2001, 2005, Taylor 2004 and Trajtenberg 1990.

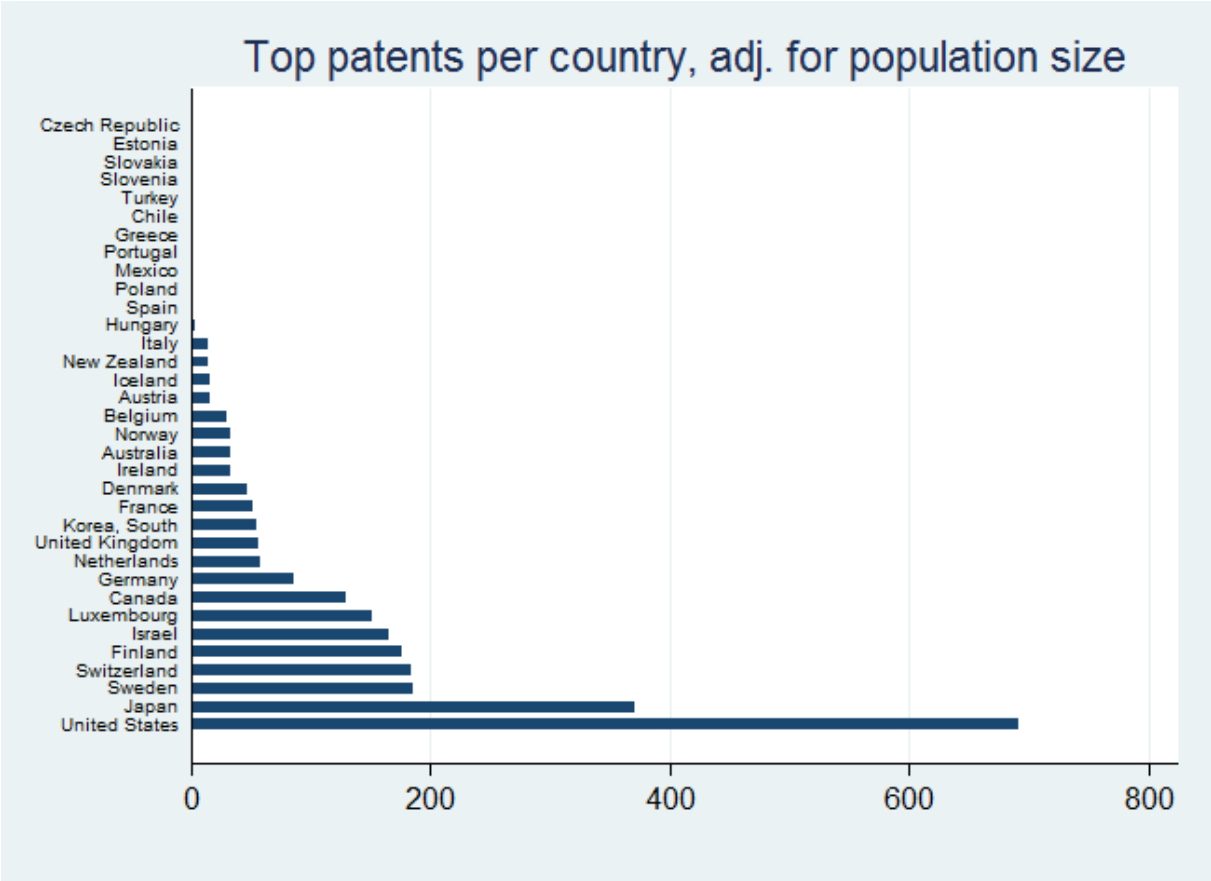
of this quality can be assumed to have been patented at all major patent offices, and thereby the bias in favor of American patents ought not be too severe.

Simple patent counts are a blunt instrument of innovation, as it gives highly innovative patents the same weight as non-influential ones (Taylor 2004). In order to single out the highly innovative patents from the rest, we make use of a recently compiled patent database comprised by the National Bureau of Economic Research (NBER), which includes information on assignee country and patent citations for the years 1975 to 2006, revised as of August 2010.[11] Patent citations, the number of time a patent has been cited in subsequent patents, is a way of estimating how influential a patent has been. As citing a previous patent limits the property rights of the subsequent patent, there are economic incentives to only cite previous patents that truly have led up to the subsequent patent. There is therefore good reason to assume that citation counts contains information regarding the technological importance of a patent (Trajtenberg, 1990). Besides from having gathered information on patent count for each patent, the NBER citations data file further includes an grossing up factor to adjust for future citations for each patent, which is based on an analysis of the year the patent was granted and technology category to which it belongs. We apply the grossing up factor to all patent citation counts to make patent citations comparable over time. [12] Secondly, we single out the top patents, defined as the decentile with the most current and estimated future citations. Top patents per million residents for each OECD country is displayed in figure 4. As is displayed, the United States has been the assignee country for more top patents at the USPTO than any other nation, in line with ARV cut-throat hypothesis. However, the other rich Anglo-Saxon countries, which are also characterized by high inequality levels, fall far behind. A closer look at the innovation levels in these countries in figure five confirms the picture – what is true for the United States does not hold a larger sample of 'cut-throat' countries.

[11] The NBER data used is the most recently released patent data file to date, "pat76_06_assg.dta", available via https://www.nber.org/patents/ .

[12] As users are advised to refrain from using the grossing up factor on patents for the last three years of the data set due to lack of sufficient data for such an estimate, our time period of analysis is 1976 to 2003. For a more elabore discussion on the methodology of the patent citation data file, please see Hall, Bronwyn, Adam Jaffe and Manuel Trajtenberg, "The NBER Patent Citation Data File: Lessons, Insights and Methodological Tools," NBER Working Paper 8498

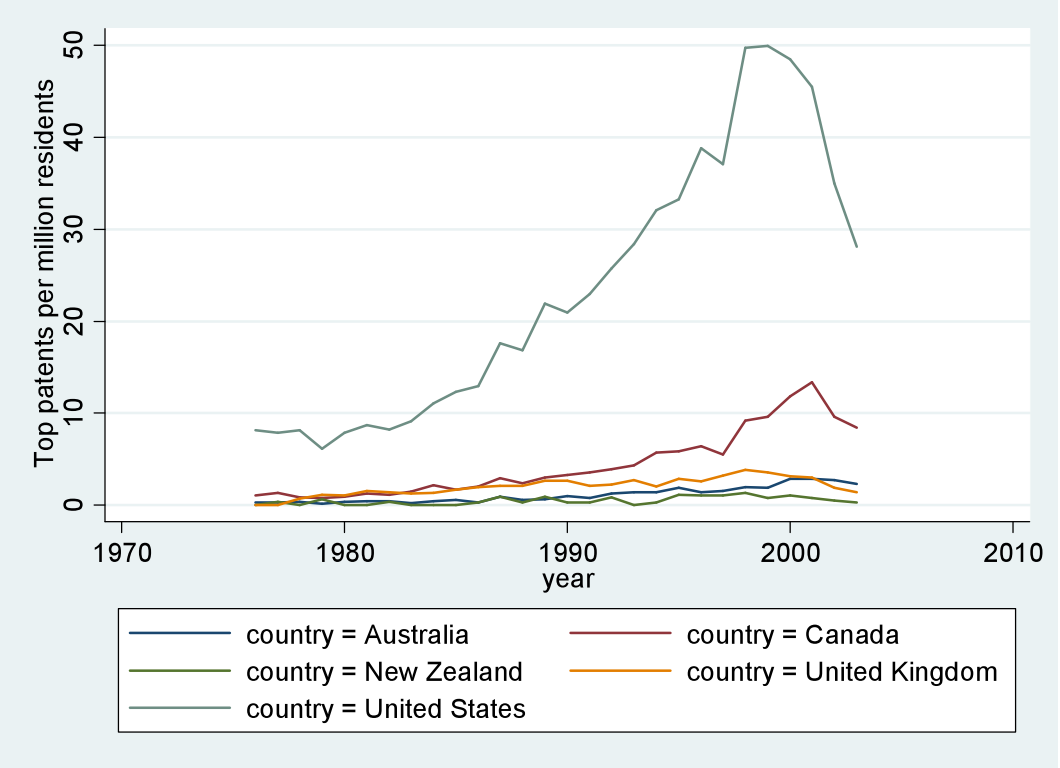
FIGURE 4**.** *Top patents per million residents for each OECD country*



Notes: The distribution of the top patents granted by the U.S. Patent and Trademark Office (USPTO) between OCED countries is displayed. The top patents are defined as those patents within the highest decentile of current and estimated future citations. Time period: 1976-2003. The data has been adjusted for population size.

Sources: The authors own calculation based on patent data, patent citation data and grossing up factor from the NBER patent data project and population data for the year 1990 from the World Bank World Development Indicators.

FIGURE 5. *Top patents per country and year*



Notes: The distribution of the top patents granted by the U.S. Patent and Trademark Office (USPTO) over time for five Anglo-Saxon countries is displayed. The top patents are defined as those patents within the highest decentile of current and estimated future citations. Time period: 1976-2003. The data has been adjusted for population size by diving by million residents.

Sources: The authors own calculation based on patent data, patent citation data and grossing up factor from the NBER patent data project and population data from the World Bank World Development Indicators.

As a robustness check of our multivariate analysis carried presented in Table 1, we exchange the Global Innovation Index for the amount of top patents each country has produced. Table 2 presents the results. As in our previous analysis, there is no link between redistribution and the national level of innovation, nor can we find a link between inequality and innovation. However, these model specifications further confirm the negative relationship between regulation and innovation.

TABLE 2 *Regressions (OLS) exploring the links between regulation, redistribution and innovation.*

	(1)	(2)	(3)	(4)
Regulation	-1.408***	-0.624*	-0.700**	-0.638*
	(0.494)	(0.329)	(0.334)	(0.331)
Redistribution	6.121	0.820		
	(4.256)	(2.712)		
Government Expenditure			-0.00502	
			(0.0349)	
Inequality				-1.688
				(5.642)
GDP p.c.		3.70e-05**	3.53e-05**	3.62e-05*
		(1.75e-05)	(1.68e-05)	(1.86e-05)
R&D		1.564***	1.491***	1.550***
		(0.282)	(0.289)	(0.290)
Constant	0.769	-2.429**	-1.660	-1.573
	(1.379)	(0.941)	(1.745)	(2.438)
Observations	27	27	26	27
Adjusted R-squared	0.298	0.757	0.735	0.757

Notes. The results from OLS regressions are displayed. The dependent variable is the number of top patents per million residents filed at the U.S. Patent and Trademark Office during the years 2976-2003 (source: authors' own calculation as presented in figure 4). The regulation variable is the result of a principal component analysis of nine regulation measurements; a detailed description of the variables employed in the PCA is provided in the Appendix. The redistribution variable is the percentage reduction in GINI coefficient due to taxes and transfers in the late 2000's (source: the OECD Dataset Income distribution – Inequality). Government expenditure is the Total general government expenditure as percentage of GDP (source: the OECD National Accounts at a Glance 2013, Table 16.1). The Government expenditure data refers to the year 2010, except for Australia and New Zealand where the most recent data available, year 2009, is used instead. Government expenditure data for Chile is missing, which limits the number of observations in model 3. Inequality is the GINI coefficient after taxes and transfers in the late 2000's (source: the OECD Dataset Income distribution – Inequality). GDP is the Gross Domestic Product per capita in current US$ year 2011 (source: the World Bank World Development Indicators database). The R&D variable a measurement of public and private expenditures for research and development as percentage of GDP (source: the World Bank World Development Indicators database). The R&D data refers to the year 2010, or the most recent data available. Due to lack of more current data, the Australia, Japan, Mexico, New Zealand & the United States data refers to the year 2009; Chile & Switzerland data refers to the year 2008; Greece data refers to the year 2007. Standard errors in parentheses. Coefficient is statistically different from 0 at the ∗∗∗ .01, ∗∗ .05, and ∗ .10 levels.

In conclusion, our second hypothesis that redistribution does not hamper innovation finds support in these cross-section analyses. The alternative hypothesis; a negative relationship between 'cuddly' capitalism and innovation, is not supported by any of our model specifications. Whether reductions in market regulation and increases in redistribution does in fact affect innovation levels is however still not fully established, as we cannot rule out an endogenous relationship at this stage. To manage this challenge, we turn to cross-time evidence, before analyzing what can be learned from studying difference in values related to innovation prevalent among the rich industrialized democracies.

5B. CROSS-TIME EVIDENCE

Following Persson and Tabellini (2003) and Blume et al (2009), Table 3 shows a time series analysis on the impact of regulation and redistribution on labor productivity. Again, it seems that both hypothesis 1 and 2 find empirical support: low regulation and high redistribution yield positive effects in all the models.

TABLE 3 *The impact on labor productivity of regulation and redistribution.*

	Pooled OLS w panel corrected standard errors	Random effects
	(1)	(2)
Absence of regulation (it)	0.122***	0.106***
	(0.0182)	(0.0139)
Total social public expenditure (it)	0.0281***	0.0250***
	(0.00113)	(0.00313)
Constant	9.650***	9.786***
	(0.113)	(0.101)
Observations	207	207
R-squared	0.456	
Number of countryID	34	34

Note: Analysis of regulation's and redistribution's impact on productivity per worker. Analysis period: 1980-2010, where every five years constitutes a point of analysis. The OECD countries have been analysed (issue with Germany here). The dependent variable, labour productivity, is the natural log of labor productivity per worker. (it) denotes panel-varying and time-varying explantory variable. *** p<0.01, ** p<0.05, * p<0.1

6. REGULATORY CULTURE VS. ENTREPRENEURIAL CULTURE

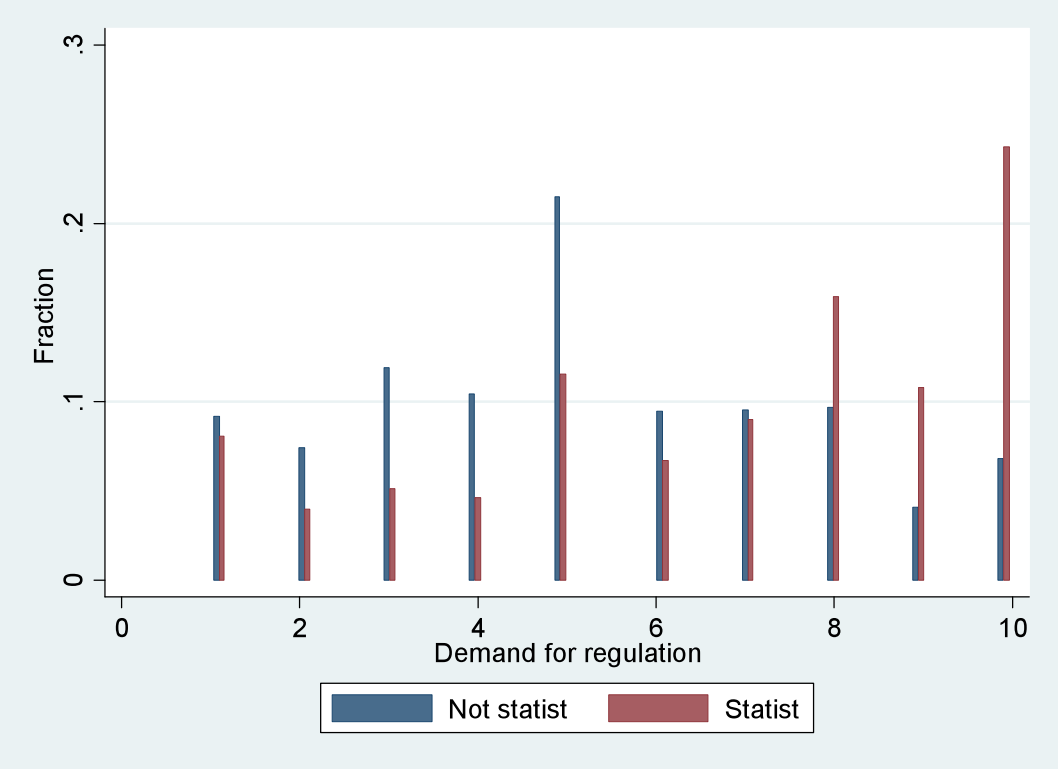
In order to further address potential problems of endogeneity and omitted variables, we take an additional step by exploring the relation between individual level values and economic policy, with data from World Values Survey (WVS) and the European Values Surveys (EVS). Following the methodology proposed by Guiso, Sapienza and Zingales (2006) on how to study the economic consequences of culture, we proceed, first, to identify how cultural values and believes affect policy preferences (for regulation) at individual; and, second, to show how those policy preferences actually affect outcomes.

Before undertaking these steps, we need to select the cultural values associated with innovation activities that could be correlated with demands for (less) regulation. An obvious candidate would a cultural belief in individualism. Indeed, the literature on innovation points to a national belief in individualism as an important driver of innovation, also on the country level (Shane, 1993; Taylor & Wilson, 2012). Therefore, we analyze contemporary survey data collecting believes in the appropriate role for the individual (versus the state) in life. In particular, we explore the answers to the following EVS/WVS question: "How would you place your views on this scale?", where 1 is defined as "Individuals should take more responsibility for providing for themselves" and 10 is defined as "The state should take more responsibility to ensure that everyone is provided for".[13] Similarly to Aghion et al (2010) and Pinotti (2012), we estimate individual predisposition to regulate with a question posed by the two most recent wave of the European Values Survey, where the respondents have been asked to position their views on a 10 point scale, where 1 is defined as "*State should give more freedom to firms"* and 10 is defined as "*State should control firms more effectively"*.

Let us start the analysis by having a look at the most statist part of the populations, those who have been the most prone to agree that *"The state should take more responsibility to ensure that everyone is provided for".* We estimate this by grouping the individuals who have places themselves between 8-10 on the 10-point value scale. Figure 6 displays that this group is strongly leaning towards demanding more regulation, whilst the rest of the respondents are quite evenly spread over the board. That is, statist individuals overwhelmingly prefer the state to regulate firms more closely.

[13] As the WVS and the EVS are largely synchronized in terms of which questions are asked, we combine the material from both surveys in order to make full use of all relevant data available

FIGURE 6 *Opinions about regulation (statist vs. not statist individuals' preferences)*



Notes: The graph shows the connection between statism and demand for regulation. People that have responded 8, 9 or 10 on WVS/EVS question regarding individualism-statism are classified as 'statist', and hence agree with the statement that "The state should take more responsibility to ensure that everyone is provided for". Regulation is the European Values Survey "Firms and Freedom" question, where 1 is defined as "State should give more freedom to firms" and 10 is defined as "State should control firms more effectively".

Let's move now to a multivariate analysis to test the strength of this relationship between individualism/statism and demand for regulation when controlling for standard variables in the literature. Both Aghion et al. (2010) and Pinotti (2012) highlight the robust link between lack of trust and demand for regulation. In particular, using the same EVS estimate for regulation as Pinotti (2012), we can test statism, in contrast to trust, as an estimate for the demand for regulation. Table 4 displays the results. Using an ordered logistic regression technique, we can see that both our mechanism (statism, model 1) and the standard mechanism in the literature (lack of trust, model 2) make people demand more regulation. Further, the overall explanatory value of the model, as indicated by the pseudo R-squared values, when using statism rather than trust to estimate the demand for regulation, is notably

higher. In other words, lack of individualism is as – and probably higher – predictor of demand for regulation than lack of trust.[14]

TABLE 4 *Individual level estimates of demand for regulation.*

VARIABLES	(1)	(2)	(3)
Statism	0.255***		0.250***
	-0.003		-0.003
	[1.29]		[1.28]
Trust		-0.397***	-0.332***
		-0.015	-0.015
		[0.673]	[0.718]
Observations	62027	60454	60018
Countries	25	25	25
Country FE	NO	NO	NO
Pseudo R-squared	0.0257	0.0027	0.0274

Note: Ordered logistic regression models. The dependent variable, demand for regulation, is the European Values Survey "Firms and Freedom" question, where 1 is defined as "State should give more freedom to firms" and 10 is defined as "State should control firms more effectively". The 'statism' variable is the response to the EVS/WVS question: "How would you place your views on this scale?", where 1 is defined as "Individuals should take more responsibility for providing for themselves" and 10 is defined as "The state should take more responsibility to ensure that everyone is provided for". The trust variable is the response to the question "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?", where the response "most people can be trusted" has been coded as 1 and "can't be too careful" has been coded as 0. The standard errors of the coefficients are presented in parentheses and odds ratios are presented in brackets. *** p<0.001, ** p<0.01, * p<0.05.

We move now to the second step: to find an aggregate connection between, on one side, average cultural values and policy preferences, and, on the other, outcomes (i.e. actual levels of regulation and redistribution). We focus on three values associated with an 'entrepreneurial culture': individualism, trust – found above to be linked to individual (lower) demands for regulation – and a third one, the (absence of) a strong preference for a safe job – available only in the 2005-2007 WVS and thus not included in the multivariate models. Conversely, if citizens are more statist (i.e. less individualistic), have lower levels of generalized trust, and have a stronger preference for a safe job, one should expect a lower innovative thrive in a given society.

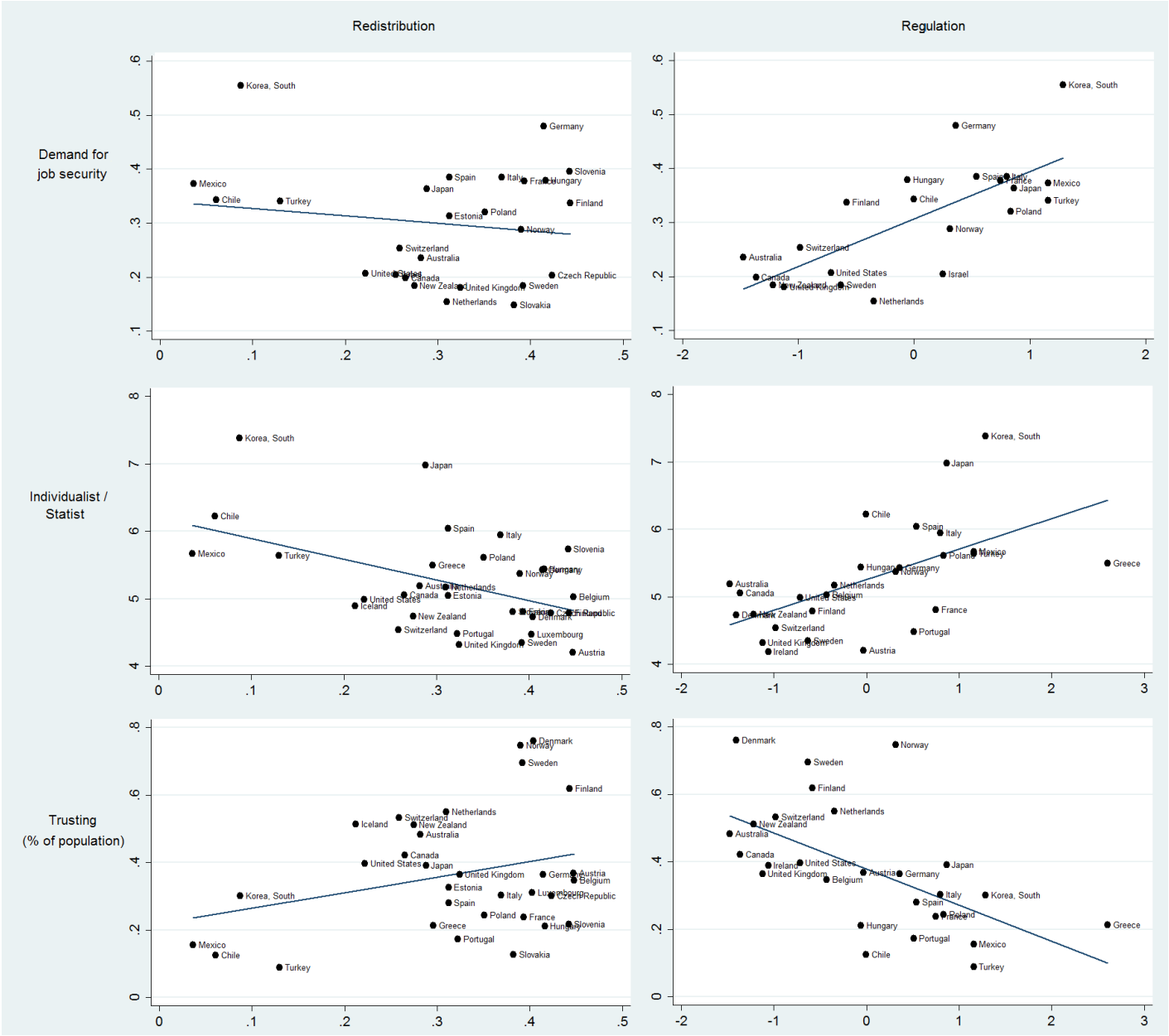
Figures 1a-f show how the two policy choices – regulation and redistribution – present almost diametrically opposite correlations with these three entrepreneurial values. High levels of regulation take place in societies with values relatively hostile to innovation – i.e. individuals

[14] As there is no EVS or WVS wave that captures both demand for regulation and demand for a secure job, the latter variable had to be left out of this analysis.

overwhelmingly prefer safe jobs, are less individualistic, and present low levels of social trust. On the contrary, and although the relationship is not so clear-cut, high levels of redistribution occur in societies that score high in values traditionally associated to innovation – i.e. fewer individuals prefer safe jobs, people are more individualistic, and have high levels of trust.

In the light of this aggregate analysis – and the previous individual-level one –, we are not in conditions to claim causality and conclude that regulation leads to cultural values more hostile to innovation while redistribution promotes pro-innovation values. We are mostly claiming here the existence of notable correlations that, in some cases, run counter long-lasting expectations in the literature. Additionally, since "all work on culture and economics faces the problem that causality is likely to work both ways-from culture to economics and from economics to culture" (Guiso, Sapienza and Zingales 2006, 24), it is likely that the results presented here are symptoms of the existence of virtuous (vicious) cycles of values-reinforcing-and-being-reinforced-in-turn-by-policies similar to the ones uncovered by Aghion et al. (2010).

On the one hand, we would have a 'regulatory culture' – preference for safe jobs, low individualism and low trust – predominant in the countries with the highest regulatory zeal – such as in most Mediterranean and Asian countries. On the other hand, most Anglo-saxon and Scandinavian countries – two groups that tend to be classified in polar cells in most political economy typologies – do exhibit an "entrepreneurial culture", where their low levels of governmental regulation correspond with societies endowed with values that stimulate innovation: individualism, trust, and risk-taking.



Note: the Job Security variable is based on the responses to the following question in the 2005-2007 World Values Survey: "Now I would like to ask you something about the things which would seem to you, personally, most important if you were looking for a job. Here are some of the things many people take into account in relation to their work. Regardless of whether you're actually looking for a job, which one would you, personally, place first if you were looking for a job: (1) A good income so that you do not have any worries about money, (2) A safe job with no risk of closing down or unemployment, (3) Working with people you like or (4) Doing an important job that gives you a feeling of accomplishment." The job security variable presented here is the percentage of the respondents that chose the second option for each country. The Trust variable is based on the EVS/WVS question: "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?". An average response has been calculated for each country based on all available data from the latter half of the 00's. The trust variable is the percentage of the population that stated that. The percentage of the respondents stating that most people can be trusted has been calculated for each country, based on all available data from the latter half of the 00's. Higher percentages correspond to a more trusting population. The Individualist/Statist variable is based on the following question from the EVS/WVS: "How would you place your views on this scale?", where 1 is defined as "Individuals should take more responsibility for providing for themselves" and 10 is defined as "The state should take more responsibility to ensure that everyone is provided for". We calculate an average response in the latter half of the 00's for each OECD country.

Conclusions

The paper has proposed a way of reconciling the negative view of state intervention for economic innovation in most theoretical models with the mostly positive effects of the state in empirical studies (Allard and Lindert 2006; Lindert 2004, 2006).

We find that paying attention to different dimensions of state intervention offers a sharper understanding of how institutions affect growth, helping to reconcile the negative and the positive views of state intervention: while one of the dimensions (i.e. regulation) has a systematic negative effect on economic innovation, the other dimension (i.e. redistribution) is found to have a neutral, or even enabling, effect

Acemoglu, Robinson and Verdier (2012) speculate that the high levels of income and wealth inequality characteristic of the United States are a necessary price for the innovation that spurs growth in the world's largest economy. Yet the data suggests that (lack of) redistribution and innovation are not that closely related empirically as many economic models predict. Our paper calls for richer conceptual and empirical distinction between types of capitalism, which shows that the standard equity-efficiency trade-off thesis is hard to square with the facts: it is possible to achieve the innovation they associate with 'cut-throat capitalism' within the framework of a more 'cuddly' or egalitarian set of institutions. We have seen that it is the attempts to curb market inequalities through 'words' (regulations) rather than 'money' (redistribution) what will tend to hinder innovation. 'Cuddly' capitalism can be innovative and dynamic, but it will tend to be less so if it relies too heavily on market regulation as a means of government interventionism.

We have showed that policy options (more/less regulation; more/less redistribution) correlate to the cultural values prevailing in different countries (e.g. more/less generalized trust; more/less individualism), which indicates a distinct causal route for the choice of institutional arrangements. These policy options could be the result of different social preferences, which, in turn, could also be the product of long historical processes: it might not be coincidental that the countries with least levels of regulation are the countries with currently higher percentages of Protestant populations, and the ones whose churches were "reformed" earlier (and probably deeper).

The policy dimensions we focus on – regulation and redistribution – can be seen as 'durable policy choices'. Thus it is plausible to think that these divergences in policy choices have

profound historical roots. The countries in the Eurozone's southern periphery may have developed a 'statist' variety of capitalism (Hopkin forthcoming), in which coordination is achieved through high levels of formal regulation and direct state intervention, in contrast to the coordination through social partnership characteristic of the Eurozone core, or the coordination through market competition of the liberal market economies. Unlike most of the Varieties of Capitalism literature, which sees the southern European countries as 'mixed market economies' or hybrids, it is likely that the statist variety constitutes a coherent model of capitalism, whose political, economic and social institutions are held together by complementarities.

To conclude we present some thoughts on how the research can develop to deal with the identification issue. Adopting a historical approach (looking at the legacies of the Reformation, of historical types of bureaucracies or of legal origins, for example) could further establish the processes through which these political economy models become entrenched. High levels of regulation could also be the historically accumulated result of certain institutions with proven ability to shape the incentives agents for generations, such as legal origin (La Porta et al. 2008). For instance, it has been claimed that corrupt and rent-seeking systems produce high levels of regulation in order to be better able to extract rents from citizens. It might not be coincidental that almost each cell corresponds to a type of legal origin: Common Law, Scandinavian Law, German Civil Law (plus France), and French Civil Law (ironically, with the only exception of France).

The paper has thus presented a conceptual critique of the Acemoglu, Robinson and Verdier thesis, and some empirical findings, which suggest that the notion of a world of 'cuddly' and 'cut-throat' capitalisms, with very different innovation and growth prospects, is unconvincing. Our two-dimensional approach to understanding government intervention fits the available data better and implies a far broader array of possible policy combinations, and the prospect of achieving innovation without a high price in economic inequality.

REFERENCES

Acemoglu D, Robinson JA, Verdier T. 2012. *Can't We All Be More Like Scandinavians? Asymmetric Growth And Institutions In An Interdependent World.* NBER Working Paper No. 18441. Cambridge: National Bureau of Economic Research

Sould we add ARV's second version of the paper, where they also include Switzerland in their analysis?

Aghion P, Algan Y, Cahuc P, Shleifer A. 2010. Regulation and Distrust. *Quarterly Journal of Economics* 125: 1015-49

Aghion, P (2012). Innovation Process and Policy: What Do We Learn from New Growth Theory? p. 515 - 520 in eds. Josh Lerner and Scott Stern *The Rate and Direction of Inventive Activity Revisited*, University of Chicago Press © NBER

Barr N. 1993. *The economics of the welfare state*. Stanford University Press

Barr N. 2003. *The welfare state as piggy bank: information, risk, uncertainty, and the role of the state.* Oxford University Press

Benabou R, Tirole J. 2006. Belief in a just world and redistributive politics. *Quarterly Journal of Economics* 121: 699-746.

Bergh A. 2004. The universal welfare state: Theory and the case of Sweden. *Political Studies* 52: 745-66

Bergh A, Bjornskov C. 2011. Historical Trust Levels Predict the Current Size of the Welfare State. *Kyklos* 64: 1-19

Berlin I. 1958. Two Concepts of Liberty. In Berlin I. 1969 *Four Essays on Liberty*. Oxford: Oxford University Press

Berlin I. 1979. *Concepts and Categories*. New York: The Viking Press.

Blanchard O, Giavazzi F. 2003. Macroeconomic effects of regulation and deregulation in goods and labor markets. *Quarterly Journal of Economics* 118: 879-907

Buchanan JM, Tullock G. 1962. *The Calculus of Consent.* Ann Arbor: University of Michigan Press

Dasgupta P. 1986. Positive freedom, markets and the welfare state. *Oxford Review of Economic Policy* 2: 25-36

Djankov S, La Porta R, Lopez-De-Silanes F, Shleifer A. 2002. The Regulation of Entry. *Quarterly Journal of Economics* 117: 1-37

Djankov S, La Porta R, Lopez-de-Silanes F, Shleifer A. 2003. Courts. *Quarterly Journal of Economics* 118: 453-517

Esping-Andersen G. 1990. *The three worlds of welfare capitalism*, New York: Polity Press

Fernandez-Villaverde J, Garicano L, Santos T. 2013. *Political Credit Cycles: The Case of the Euro Zone*, NBER Working Papers 18899. Cambridge: National Bureau of Economic Research

Glaeser EL, La Porta R, Lopez-de-Silanes F, Shleifer A. 2004. Do institutions cause growth? *Journal of Economic Growth* 9: 271-303

Greif A, Iyigun M, Sasson D. 2011. *Risk, institutions and growth: Why England and not China?* Available at SSRN 1783879.

Hall PA. 2013. Brother, Can You Paradigm? *Governance-an International Journal of Policy Administration and Institutions* 26: 189-92

Hall PA, Gingerich DW. 2009. Varieties of Capitalism and Institutional Complementarities in the Political Economy: An Empirical Analysis. *British Journal of Political Science* 39: 449-82.

Hall PA, Soskice D. 2003. Varieties of Capitalism and Institutional Change: A Response to Three Critics. *Comparative European Politics* 1:241-250

Holmstrom B. 1979. Moral Hazard and Oberservability. *Bell Journal of Economics* 10: 74-91

Hopkin J, Blyth M. 2012. What can Okun teach Polanyi? Efficiency, regulation and equality in the OECD. *Review of International Political Economy* 19:1-33

Iversen T & Soskice D. 2006. Electoral institutions and the politics of coalitions: Why some democracies redistribute more than others. *American Political Science Review,* 100: 165–81

La Porta R, Lopez-De-Silanes F, Shleifer A. 2008. The economic consequences of legal origins. *Journal of Economic Literature* 46:285-332

Lindbeck A, Snower DJ. 2001. Insiders versus outsiders. *Journal of Economic Perspectives* 15: 165-88

Lindert, Peter H., 2004. *Growing Public*. Cambridge: Cambridge University Press

Lindert PH. 2006. The welfare state is the wrong target: A reply to Bergh. *Econ Journal Watch* 3: 236-50

Pettit P. 2008. Freedom and probability: a comment on Goodin and Jackson. *Philosophy & Public Affairs*, 36:206-220

Pinotti P. 2012. Trust, Regulation, and Market Failures. *Review of Economics and Statistics* 94: 650-58

Przeworski A, Teune H. 1970. *The logic of comparative social inquiry*. New York: Wiley-Interscience

Sapir A. 2006. Globalization and the reform of European social models. *Jcms-Journal of Common Market Studies* 44: 369-90

Scruggs L, Allan JP. 2006. The material consequences of welfare states - Benefit generosity and absolute poverty in 16 OECD countries. *Comparative Political Studies* 39: 880-

904

Shane S. 1993. Cultural influences on national rates of innovation. *Journal of Business Venturing* 8:59-73

Shleifer A. 2010. *Efficient regulation.* NBER Working Paper No. 15651. Cambridge: National Bureau of Economic Research

Stigler G. J. 1971. The theory of economic regulation. *The Bell journal of economics and management science*, 3-21.

Streeten, P. 1981. *First things first: meeting basic human needs in the developing countries*. World Bank-free PDF.

Taylor M Z, Wilson S. 2012. Does culture still matter? The effects of individualism on national innovation rates. *Journal of Business Venturing* 27:234-247

Thelen K. 2012. Varieties of Capitalism: Trajectories of Liberalization and the New Politics of Social Solidarity. *Annual Review of Political Science* 15:137–59

Tiessen J H. 1997. Individualism, collectivism, and entrepreneurship: A framework for international comparative research. *Journal of Business Venturing* 12: 367-384

Tullock G. 1967. Welfare Costs of Tariffs, Monopolies, and Theft. *Western Economic Journal* 5: 224-32

Zweimüller, J. (2000). Schumpeterian Entrepreneurs Meet Engel's Law: The Impact of Inequality on Innovation-Driven Growth, *Journal of Economic Growth*, 5: 185–206

APPENDIX

PRINCIPAL COMPONENT ANALYSIS

Nine variables were analyzed measuring regulatory approaches to labor, product and financial markets. The variables are produced by the World Bank, the OECD and the Heritage foundation, using the most data available for each measurement. Variance explained: 43.7%, Kaiser-Meyer-Olkin Measure of Sampling Adequacy: 0.733.

Labor market regulation

World Bank - data as presented in the report 'Doing Business 2010: Reforming through Difficult Times'. The three indicators that the report uses to measure the rigidity of employment are included:

- Difficulty of Hiring Index –0-100 index measuring the applicability and maximum duration of fixed-term contracts and the minimum wage for trainee or first-time employee.
- Rigidity of Hours Index - 0-100 index measuring restrictions on night work and weekend work, allowed maximum length of the workweek and paid annual vacation days.
- Difficulty of Redundancy Index – 0-100 index measuring notification and approval requirements for termination of a redundant worker, obligation to reassign or retrain and priority rules for redundancy and reemployment.

Product market regulation

World Bank – data from the 'Doing Business 2013 - Smarter Regulations for Small and Medium-Size Enterprises' retrieved online 2013-02-04. Two variables were used:

- Starting a Business Procedures – the number of procedures that are officially required, or commonly carried out in practice, in order to start up a business.

- Starting a Business Cost – the cost, as % of income per capita, to complete the procedures.

OECD

- 2008 OECD Indicator of Product Market Regulation (PMR) –0-6 index covering formal regulations in the following areas: state control of business, barriers to entrepreneurship and barriers to trade and investment.

Financial market regulation

The Heritage Foundation – data from the 2013 Index of Economic Freedom. As the Heritage Foundation measures absence of regulations and restrictions, all the variables are negatively correlated with the regulation factor score obtained from the PCA analysis. The three indexes that the report uses to measure the openness of markets are included:

- Trade Freedom – 0-100 index measuring of the absence of tariff and non-tariff barriers.
- Investment Freedom - 0-100 index measuring the degree of free mobility of resources into and out of specific activities, internally and across the state's borders.
- Financial Freedom - 0-100 index measuring banking efficiency and independence from government control in the financial sector, including openness to foreign competition.

DESCRIPTIVE STATISTICS

TABLE X *Descriptive statistics for the cross-section analysis*

VARIABLES	Obs.	Mean	Std. Dev.	Min	Max
The Global Innovation Index	27	51,92	9,24	32,90	68,20
The Global Competitiveness Index	27	5,01	0,49	3,86	5,72
Regulation	27	0,04	1,00	-1,47	2,61
Redistribution	27	0,30	0,12	0,04	0,45
Government Expenditure	26	46,0	8,3	23,3	57,7
Inequality	27	0,32	0,06	0,25	0,49
GDP p.c.	27	40475	21234	10047	98102
R&D	27	2,10	1,12	0,37	4,40

TABLE X *Correlation matrix for the cross-section analysis*

	GII	GCI	Regulation	Redistr.	Gov. Exp.	Inequality	GDP p.c.	R&D
GII	1.0000							
GCI	0.9113* (0.0000)	1.0000						
Regulation	-0.7218* (0.0000)	-0.6617* (0.0002)	1.0000					
Redistribution	0.4143* (0.0317)	0.2699 (0.1733)	-0.2495 (0.2095)	1.0000				
Gov. Exp.	0.2549 (0.2088)	0.0880 (0.6692)	-0.1525 (0.4570)	0.8554* (0.0000)	1.0000			
Inequality	-0.5446* (0.0033)	-0.3890* (0.0449)	0.2163 (0.2786)	-0.8512* (0.0000)	-0.6639* (0.0002)	1.0000		
GDP p.c.	0.7374* (0.0000)	0.7178* (0.0000)	-0.5092* (0.0067)	0.4419* (0.0210)	0.1611 (0.4318)	-0.5624* (0.0023)	1.0000	
R&D	0.7180* (0.0000)	0.7105* (0.0000)	-0.3047 (0.1223)	0.2627 (0.1855)	0.1037 (0.6141)	-0.4184* (0.0298)	0.4541* (0.0174)	1.0000

Notes. The pairwise correlation of the variables in the cross-section analysis are displayed. The significance level of each correlation is brackets below each coefficent .All correlation coefficients significant at the 10% level or better are indicated with a star.