

Article

The Political Economy of Rent-Seeking: Evidence from Spain's Support Policies for Renewable Energy

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Abstract: This paper provides a theoretical framework to explore how the support policies for renewable energies can promote rent-seeking incentives in private firms. We develop a political economy of rent-seeking that considers the link between the regulatory decisions of political agents and the potential scope of socially wasteful pursuits. We argue that systematic public support schemes bring rent-seeking as a perception shared by entrepreneurs that influencing political allocations of resources is an essential and potentially preferable source of private profit than other for-profit economic avenues. As evidence of our claims, the framework is applied to the case of Spain to illustrate the economic effects of support policies on the production and distribution of renewable energy. We find rent-seeking behavior in Spain's renewable energy industry, and precisely that: (i) political regulations have induced market concentration and rent-seeking in renewable energy firms, (ii) these firms have required increasing regulations and premiums to survive, and (iii) energy consumers are forced to pay rent-seeking through increasingly expensive electricity bills. The analysis reveals some challenges and opportunities to drive efficient market-based policies to strengthen entrepreneurial competition and curb rent-seeking behavior. These insights have relevant proposals for the Spanish energy industry in complying with the EU Green Deal through a sustainable transition and comprehensive growth.

Keywords: rent-seeking; energy reliability; EU Green Deal; political economy; economic growth



Citation: Espinosa, V.I.; Peña-Ramos, J.A.; Recuero-López, F. The Political Economy of Rent-Seeking: Evidence from Spain's Support Policies for Renewable Energy. *Energies* **2021**, *14*, 4197. <https://doi.org/10.3390/en14144197>

Academic Editor: Antonio Gagliano

Received: 14 May 2021

Accepted: 27 June 2021

Published: 12 July 2021

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1. Introduction

Energy dependence, climate change and international political agreements have promoted the clean energy transition as a central policy of the global community to overcome these challenges [1]. At present, the EU is fighting climate change through ambitious domestic policies and close cooperation with international partners [2,3]. While the European policy is based on the EU Green Deal to support renewable energies and stop climate change, revert biodiversity loss and cut pollution, this paper aims to analyze and discuss the distinctive features of the case of Spain [4,5].

Spain's support policies for renewable energies are among the most widespread in the European Union since the beginning of the twenty-first century [6,7]. On the one hand, the Spanish Electricity Network (SEN) rules which firms can access the energy market. On the other hand, the government rules what, how, how much, and at what price energy can be produced and distributed in the market. Likewise, the government grants significant premiums for admitted private firms, creating a saturation of access applications as an investment bubble in the renewable energy sector [8,9]. These administrative transfers provide high benefits of up to 100,000 euros/megawatt for private firms [10]. Thus, it is not surprising that the rapid expansion of renewables in recent decades has "made the sector one of the most promising industries with a growing number of investors" [11].

In the 2000s, Spain's support policies for renewable energies increased its production by 120.8%, compared to 76.8% in the European Union (EU) [12]. In 2007, Spain was the second country globally with the most outstanding support policies for private investment in renewable energy, behind the United States. If we look at the production of electricity from renewable energies (excluding hydroelectric), between 1991 and 2013 worldwide, Europeans and Spain "went from 1.03%, 0.76%, 0.36% to 5.37%, 14.98% and 25.74%, respectively" [7]. In 2020, the Bloomberg New Energy Finance (BNEF) pointed out that the system of regulations and premiums to support the profitability of private firms places Spain as the sixth most attractive market to invest in renewable energies [13]. For this reason, the Ministry for the Ecological Transition and the Demographic Challenge of Spain received applications from private firms to access the renewable energy market for a total amount of 430 gigawatts of power. However, the current installed power is 110 gigawatts and its demand maximum recorded in recent years is 40 gigawatts [14]. From the macroeconomic point of view, the Association of Renewable Energy Companies (AREC) considers a boom in the contribution of the renewable energy sector to the Spanish Gross Domestic Product (GDP) of 1.01%, where investments in R + D + i double the EU average and triple the average for Spanish firms in recent years [15].

A different little-explored approach considers one of the weaknesses of Spain's support policies for renewable energies: the rapid investment growth driven by regulations and premiums has generated a legal oligopoly of four firms that control 85% of energy production and 90% of final sales [16]. The probability that energy consumers will have the logo of these firms on their bills is very high. Although a small percentage of the population has a bill not directly dominated by one of these five firms, the energy consumption also passes through one of these firms as they control 100% of the distribution network [17]. Thanks to the restricted competition, these firms have built a lucrative business that moves around 40,000 million euros in Spain [18].

While the explanations above consider some aspects of Spain's support policies for renewable energies, the core lies in forms of rent-seeking behavior such as monopoly profits for special interest groups [19,20]. This activity restricts market competition and reduces the rent-seeking costs for monopolistic firms. Rent-seeking is socially wasteful and makes it hard to implement market-based reforms to reverse this condition. This paper provides a theoretical framework to explore how renewable energy support policies can promote rent-seeking incentives in private firms. The question thus examined is whether such rent-seeking exists in Spain's renewable energy industry and what were the economic consequences of this activity. The paper proceeds as follows: Section 2 discusses some aspects of the political economy of rent-seeking. Section 3 applies the framework to the case of Spain to examine the challenges and opportunities of the support policies for renewable energy. It briefly discusses some market-based policies to promote market competition and curb rent-seeking behavior. Section 4 concludes with lessons to comply with the EU Green Deal through a sustainable transition and comprehensive growth.

2. Theoretical Framework and Methodology

A political economy of rent-seeking deals with how government restrictions on economic activity give way to various forms of rents, where firms often compete for them [21,22]. Rents are the advantages that special interest groups obtain due to government restrictions and premiums to stimulate some activities [23]. Sometimes, competition for these rents is perfectly legal. In other instances, rent-seeking takes other forms, such as corruption, smuggling, and black markets [24]. Thus, the positive theory of rent-seeking is a natural extension of the theory of dynamic efficiency [25,26]. While the market is best explained as a spontaneous process of wealth creation and distribution, the government is a coercive mechanism for the redistribution of wealth [27]. This section develops a theoretical framework to explore the characteristics of successful rent-seeking and discusses the logic behind success. In addition, the theoretical consequences of rent-seeking that influence the dynamic efficiency of the market process are examined.

The economic standard of dynamic efficiency is inextricably linked to the concept of entrepreneurship, understood as “the typically human capacity to perceive profit opportunities and act accordingly to take advantage of them” [25]. The theory of dynamic efficiency requires an initial, albeit brief, review of the essential attributes of entrepreneurship as a driving force in the market process and economic growth [28,29]. First, entrepreneurship always creates new information. Every entrepreneurial act implies the “alertness”—perception and judgment—of new information that the actor did not previously possess (a profit opportunity that had previously gone unnoticed) [30]. Likewise, entrepreneurial information is subjective, practical (in the sense that it is created through entrepreneurship in its specific contexts), dispersed (the mind of each human being owns a part of it) and tacit (very difficult to articulate) [31]. When an entrepreneur perceives a profit opportunity, the actor creates new information *ex-ante* in his mind, resulting in a subjective *ex-post* profit or loss. At least temporarily, profit indicates a return on the resource owner’s opportunity cost (incentive to act), and losses indicate that he has wasted resources (incentive to stop action) [32]. Therefore, profit and loss judgment guides people toward increasingly worthwhile ends.

Second, entrepreneurship transmits information about historical exchange relationships in successive waves through the market process. Market prices communicate entrepreneurial knowledge about the relative scarcity of goods and services subjectively valued by suppliers and demanders, participating in the market or refraining from doing so [33]. They are used to carry out a rational economic calculation: the estimation in monetary units of the possible results of the different action plans [34]. This mechanism includes expectations and accounting that guide entrepreneurs what, how, how much, and at what price to exchange goods. While the subjective valuations of consumers spontaneously determine the prices of consumer goods, entrepreneurs estimate the prices at which they will sell their products and demand factors of production (which, finally, sets the price of factors of production) [35]. Hence, the market price is a perception and judgment of what actors think about the economic conditions of tomorrow.

Third, entrepreneurship drives the competitive market process, which tends to coordinate individual action plans. When action plans consist of trading goods in monetary units, market prices incorporate large amounts of information at low cost. A solution implies the entrepreneurial propensity to coordinate the total quantity supplied and demanded of each good [36]. Although the perfect solutions are beyond human possibilities, the unhampered market process tends to entrust production to the most astute people to satisfy the demands of others. All categories of market failures—monopoly power, public goods, externalities, asymmetric information and moral hazard—“are evident much more in political than in ordinary markets, not least because of the ubiquity of indivisibilities in political markets” [37,38]. It is an ongoing process of trial and error as the propagation of a coordinated “social big bang” [25]. In the market process, entrepreneurs tend to spontaneously discipline and coordinate their actions according to the needs of consumers. The dynamic market conditions serve as a learning platform to perceive and solve increasingly complex human problems [39]. This entrepreneurial process of creative destruction is dynamically efficient because it challenges established political, economic, and social structures by widening the range of alternatives open to people [40].

Remarkably, comprehensive growth requires “inclusive institutions” based on private property rights and competitive markets that foster dynamic efficiency through broad-based incentives and opportunities in society [41]. These institutions include checks and balances and restrictions on executives, legislatures and bureaucrats to ensure a wide distribution of political power in society [42]. In contrast, “extractive institutions” lack these properties because entry barriers to entrepreneurial competition weaken the dynamic efficiency of the market process [43]. These entry barriers include poor maintenance of public order, instability in political and economic institutions, unstable monetary and fiscal conditions, and the support policies through regulations and premiums to benefit some special interest groups at the expense of others.

Now that we have described the key characteristics of the theory of dynamic efficiency, we can better understand the economic concept of rent-seeking. The initial problem is to clarify the terminology. Rent is a venerable concept in economics. Most economists consider “rent-seeking” to be equivalent to “profit-seeking” [44]. However, rents can come from two sources. They can arise spontaneously through the price system in a competitive market process as a common feature of economic life. When competition is considered a dynamic, value-generating and evolutionary process, economic rents are crucial to driving the entrepreneurial process of efficient resource allocation.

Alternatively, rents can also be artificially devised through, for example, government interventionism. The role of government in redistributing the wealth created and distributed in the market process for reasons of justice or equity is widely known [45]. While the government can promote or suppress a specific economic activity through legal barriers to entry, large-scale intervention creates a pool of economic rents in local industries. For example, the government can establish regulations, premiums, and tax credits for special interest groups, which impose entry barriers for current and potential competitors. In the last case, rent-seeking is “the expenditure of scarce resources to capture a transfer created artificially by government support policies” [46]. Political rent-seeking can take various forms, but it is most commonly associated with corruption, smuggling, and black markets in the literature [47]. We can identify three main reasons why rent-seeking weakens the dynamic efficiency of the market process: ‘market concentration’, ‘disjunction between costs and revenues’, ‘distortion of the price system’.

Market concentration occurs when the presence of entry barriers constitutes a monopoly power in particular areas of the economic activity—that is, market concentration results from prior monopoly power [48]. However, there being no close substitutes because no one can beat a monopolist is not the same as there being no substitutes because government regulations prohibit competition. Are there legal barriers to entry into the market? Hence, there are two opposite types of market concentration depending on the nature of the entry barriers. On the one hand, a legal monopoly is a government privilege that grants exclusivity to a special interest group to dominate the market of a particular good with an obligated demand [49]. If the government authorized a firm or group of firms to produce and distribute a good, the legal monopolist knows that it has no close or potential competitors. This type of market concentration is dynamically inefficient because it cuts off the creative and coordinating element of entrepreneurial competition [50]. In this scenario, the support policies for some firms through entry barriers promote rent-seeking behavior due to the privilege of capitalizing on abnormal gains.

On the contrary, a competitive monopoly is when a firm or group of firms provides a product or service in the market process without government interventionism [51]. In the absence of legal barriers to entry, a monopolist always competes regardless of if they are the only one in the market process. In this case, there are no rent-seeking queries because the entry barriers are mainly technological and capital stock, but potential competitors do not have legal restrictions to enter the market [52]. There are no close substitutes if no new firms enter the market, but the potentiality is always latent. The competitive monopolist can only maintain his market concentration if he continuously innovates to meet consumers’ needs more efficiently than the current or potential competition [53]. If he does not achieve this objective properly, new profit opportunities will be perceived by other entrepreneurs to enter the dynamic market process.

The disjunction between profits and losses is described as follows. Unlike markets, in which, through the price system, firms tend to coordinate production costs with the profits that sustain them, legal monopolies operate by non-market courses, such as regulations and premiums to support them [54]. Specifically, the support policies favor some economic activities at the expense of others, separating the coordinating propensity of the market between the provisions of supply and demand. These shielded firms are not competitive enough in the market process without legal barriers to entry. If these firms were efficient in meeting the consumers’ needs, support policies to protect them would be unnecessary. This

disjunction between profits and losses is dynamically inefficient, reducing the incentive to keep costs to a minimum: the best way to keep the legal monopoly in operation is through increasingly high regulations and premiums [55].

The absence of this crucial link between profits and losses at market prices means that the scope of the wasteful allocation of resources is significantly increased because the government can only redistribute wealth previously created by the private sector through taxes. If there are technological possibilities to reduce cost functions, increase productivity, or realize economies of scale, these opportunities are more likely to be overlooked or less likely to be exploited by non-market entities than by market activities [37]. Thus, “real” rents, a product of the competitive market process, are different from “government” or “fake” rents, a product of government privileges because rent-seeking has productive implications in the first case but not in the second. As William Baumol has suggested, restricted entrepreneurship becomes “parasitic” through the “tendency to seek profit and alter market conditions by political means in the broadest sense of the word” [56].

Distortion of the price system results from comparing a competitive market situation and an intervened market. When the government intervenes in markets to redistribute income, market prices and economic calculations are distorted [26]. This coercion generates waste of scarce resources and a social lack of coordination in those restricted areas. As Huerta de Soto points out, the pretension to coordinate supply and demand by non-market courses is “an intellectual error, because its impossible for the governing body responsible for exercising coercion to acquire the information it would need to make its commands truly coordinating. This is the problem with the support policies. Its central paradox” [57]. The absence of perfect information means that quantity regulation may result in overproduction or underproduction of the good or service in question. These impediments can result in regulated prices being set too high or low, thus creating an excess supply or demand. Moreover, protected entrepreneurs may choose rent-seeking as an entitlement process because part of the costs is passed on to others, such as taxpayers and consumers. Even welfare-enhancing rent-seeking may be undesirable if it precludes a more efficient means of achieving the same end [58].

Regardless of the analysis above, rent-seeking could be justified to internalize externalities [59]. Such transfers are based on welfare economics, especially the Pigouvian approach of “optimal subsidies” to promote positive externalities [60]. When market forces alone cannot eliminate the divergence between private and social costs, some government action is automatically required to sustain “desirable” activities or prevent “undesirable” activities. However, the concept of externality as a justification for central planning is problematic [26,61]. First, all human actions generate externalities in others in “subjective” ways, so the non-market decision of which externality to subsidize or tax is arbitrary [31]. If we follow the argument that market actors cannot know what is “social optimum”, there are epistemological reasons to question that policymakers could coordinate action plans efficiently. Second, central planning faces an apparent paradox [62]. If the government intervenes in a coercive way in the market process, it will destroy the entrepreneurial capacity to create the information required to achieve dynamic efficiency, and if it does not intervene, it does not obtain any information either [57]. Third, central planning results in the “corruption effect”: the coerced human beings perceive that they stand a better chance of achieving their goals if they devote their time, effort and intellect to influence political decision-making [63]. Thus, central planning legitimizes rent-seeking behavior, weakening the dynamic efficiency of the market process.

3. Background and Discussion

Renewable energy brings advantages both in terms of energy security and sustainable development. Therefore, one of the key pillars of the energy policy in the global community is the green energy transition. Much has been written about countries’ efforts to develop sustainable policy. However, little is known about how energy policies can generate rent-seeking behavior. To close this gap, we apply the political economy of rent-seeking

previously proposed to the case of Spain's renewable energy sector, which consists of an energy investment bubble to promote these technologies [16–18]. This energy bubble deals with “generation overcapacity, various tariff hikes over recent years, uncertainty over the financial reliability of many power plants and a regulatory framework that lacks stability” [9]. Specifically, we focus the study on the system of regulations that generates an unsustainable tariff deficit, where rent-seeking could appear as (i) market concentration, (ii) growing demand for rent-seeking to finance deficit energy projects, and (iii) consumers pay rent-seeking through increasingly expensive energy bills.

Data on rent-seeking and its economic consequences were obtained from the *Comisión Nacional de los Mercados y la Competencia* (CNMC) of Spain [64–66]. This evidence shows that the government's support policies have significantly advanced in the installed power of renewable energies (mainly wind and solar photovoltaic). It is important to highlight that the EU guidelines influence the renewable energy objectives and its support schemes. Spanish energy policy, aware of its role in establishing sustainable development, fully shares these coordinates. However, the economic crisis and legal barriers to entry have created pressure to increase regulations and premiums, compounding the dynamic inefficiency explained in Section 2.

3.1. The Case of Spain

It is pertinent to explore the beginnings of electric energy in Spain to understand the background of renewables. The perils of climate change, dependence on energy imports, and exhaustibility of fossil fuels have encouraged many governments to seek sustainable alternatives to conventional energy sources [67,68]. Precisely, governments seek strategies to increase investment in the renewable energy industry, reduce greenhouse gas emissions, and increase the reliable energy supply. In this regard, Spain is one of the leading countries in betting on renewable energies due to its scarcity of fossil fuels [6,7]. It resulted in significant external dependence (especially on oil and gas) and a historical deficit situation. In the 1980s and 1990s, the degree of energy dependence in Spain was around 80%, while in the case of the EU, the value fell to almost 54% [69]. Although the 1980's internal energy production was based mainly on coal, a few years later, nuclear energy grew significantly, while renewable energies have gained ground since the mid-1990s. However, the green energy transition has not been straightforward: energy efficiency has been a significant problem in the Spanish energy sector [6,18,70].

Until the end of the 1990s, the Spanish energy system consisted of strict regulations on the production and distribution of the energy system. The energy sources were non-renewable: hydroelectric (20%) and thermoelectric (80%) based on uranium, oil and coal [69]. From the legislative point of view, regulation in Spain revolved around Law 49/1984 on the *Explotación Unificada del Sistema Eléctrico Nacional* (EUSEN), the *Marco Legal Estable* (MLE) of 1987 and the *Ley de Ordenación del Sistema Eléctrico Nacional* (LOSEN) of 1994 [66]. The objectives of these regulations were to strengthen the state's control over the production, distribution, and energy tariff, along with guaranteeing the endowment of technologies to cover demand [71]. Under the National Energy Plans principles, government regulation essentially focused on entry barriers to promote collaboration between public firms (Endesa and Enher).

The Spanish Electricity Network (SEN) emerged as a state firm thanks to the contribution of the high voltage networks that belonged to the two state firms (Endesa and Enher), to which private firms would be added (Hidroeléctrica Española, Iberduero, Fecca, Sevillana de Electricidad and Unión Fenosa) with a unique distribution network and tariff rates for consumers [72]. In 1996, these legal barriers to entry caused two firms to control 84% of the installed energy capacity and 100% of the distribution network, which produced a market concentration [73]. On the one hand, Endesa absorbed Enher and other private firms (Fecca, Sevillana de Electricidad, Electra de Viesgo and Fecca) to become the most prominent electric energy firm in Spain with a market concentration of 46%. On the other

hand, Iberduero merged with Hidroeléctrica Española to create Iberdrola with a market power of 38% [73].

Starting in the 2000s, the government of Spain developed various policy impulses to support electric energy generation from renewable energy sources. The objective was to achieve the policies of Europe 2020 and the Kyoto Protocol [74,75]. Moreover, Spain followed a Sustainable Development Strategy, drawn up in 2007, to reduce energy dependence through the clean energy transition [3]. The proposed plan sought to ensure that green energy reliability contributes approximately 20% renewable energy in 2020 (i.e., more than double the 9.8% recorded in 2010). To achieve the reliability objectives of green energy, the government of Spain built the regulations and premiums system to support private investment in renewable energy and reduce entrepreneurial uncertainty. As a result, the government created a bubble in the renewable energy industry [9,11,13,14]. In the last decade, this represented a growth of 120.8%, compared to 76.8% for the whole of the European Union (EU) [7,12]. In 2020, the renewable energies that contribute the most to energy production in Spain were wind energy (51%), hydraulic energy (36%) and solar energy (8%). All renewable technologies produce approximately 37.5% of the total energy demand in Spain, its highest share in the generation mix [14].

The government of Spain signed the EU Green Pact and the National Integrated Energy and Climate Plan (NIECP) 2021–2030 to increase the support policies for renewable energies [3–5]. However, legal entry barriers have fueled the investment bubble with a three-fold effect that has persisted since the beginning of the early twenty-first century. First, the production, distribution and consumption of energy are governed by a regulatory framework that encourages a small group of giant firms, such as ENDESA, Iberdrola, Naturgy and EDP, to control 85% of the market [65]. These multinationals make up a market concentration that does not favor the transition to a competitive model. Second, firms did not have incentives for efficiency because the regulator did not reward the most efficient, but rather the opposite, emphasizing, above all, the reduction of costs. Hence, the disjunction between profits and losses of renewable energy firms compared to conventional ones led to a rent-seeking environment. The inefficiency of the regulated firms raised the costs of the renewable energy premiums to 9000 million euros per year, aggravating the problem of the tariff deficit; the recognized costs of the regulated activity are higher than the income obtained, which settled 14,300 million euros in 2020 [76]. As a result, Spain is ranked as the country that granted the most premiums to this sector.

Third, there were transfers of income from consumers to firms, justified by the regulator in the attention paid to overcoming the deficit situation of the renewable energy industry. The government forces consumers to finance rent-seeking through taxes on calculating firms' profitability based on the service cost [69]. Distortion of the price system resulted in an overestimation of demand and a rise in prices. Thus, the government ended up giving in favor of firms, through the general increase in regulations, and against consumers, favoring the rise in electricity bills. Furthermore, the COVID-19 crisis forced the government of Spain to reduce premiums to the renewable energy industry, but political barriers to entry did not change [77,78]. This choice strengthened the legal oligopoly and intensified the tariff deficit, contributing to the 80% increase in the price of electricity for consumers in the last decade. Consequently, the Spanish energy sector needs to buy coal quotas to pass the emissions assessments and, as GDP grows, so do emissions [79].

3.2. Data Analysis

As indicated above, we employ three proxies to demonstrate rent-seeking behavior. The first is the market concentration in the generation, distribution and commercialization of energy. Table 1 shows that 324 firms supplied electricity to the domestic segment in 2019. However, one of the significant problems of the Spanish electricity sector is because 85% of energy production, 100% of the distribution network, and 90% of final sales are controlled by four giant firms (Endesa, Iberdrola, Naturgy and EDP), so we can say that we are facing an oligopolies electricity market [64]. Moreover, we use the Herfindahl–Hirschman Index

(HHI) to measure the concentration of the electricity market [80,81]. HHI is an index used in economics to measure the level of concentration or market power in a specific industry. The higher the HHI, the higher the market concentration, so the less diverse is the industry examined. For n number of firms available in the renewable energy generation market, the Herfindahl–Hirschman Index (HHI) is:

$$HHI = \sum_{i=1}^n S_i^2 \quad (1)$$

In Equation (1), n is the number of renewable energy firms, S is the relative size of the firms or their relative market share, and i is expressed as a percentage. The HHI index is calculated by summing the squares of each renewable energy firm's share in the industry. In this regard, ratios between 1000 and 1800 points reflect a competitive marketplace, ratios between 1800 and 2500 for a concentrated marketplace (oligopoly), and above 2500, the market could be considered highly concentrated (monopoly). Although the index declined steadily in the domestic segment, Table 1 confirms that the value obtained is still around 2500, which is why it is considered a segment with an oligopolistic concentration. In the last decade, the participation of small energy production and commercialization firms has grown by 75%, but the four giant firms only reduced their market power by 10% (from 94% to 85%, respectively).

Table 1. Evolution of the market power of energy supplied for the domestic segment.

	Endesa	Iberdrola	Naturgy	EDP	Viesgo	Repsol	Others	HHI
2011	42%	35%	15%	2%	2%	0%	3%	3.237
2012	41%	35%	16%	3%	2%	0%	3%	3.173
2013	41%	34%	16%	3%	2%	0%	4%	3.071
2014	39%	33%	17%	3%	2%	0%	5%	2.943
2015	39%	33%	17%	3%	2%	0%	6%	2.903
2016	38%	32%	17%	3%	2%	0%	7%	2.796
2017	37%	32%	17%	3%	2%	0%	8%	2.694
2018	37%	32%	15%	3%	2%	0%	10%	2.609
2019	36%	32%	13%	4%	0%	3%	12%	2.500

Source. Own elaboration from CNMC data [64].

Furthermore, the European Commission built a report on European Barriers in Energy Markets, which analyzes market concentration in EU countries as a strategic advantage of specific market players [66]. Specifically, forty-five general barriers to entry into the European Union have been recognized, which in turn are grouped into four blocks. First, regulatory disincentives consist of price regulation, market sharing, regulation unpredictability, and problems of access to innovation. Second, market inequality lies in market power, unequal market access, and instability of wholesale. Third, operational and procedural obstacles to competition are sign-up and operation compliance and data access and processes. Fourth, customer inertia implies legal restrictions on consumer sovereignty through the lack of open alternatives to choose energy suppliers and rising prices. Although these parameters do not indicate per se which blocks are most significant, all of them can discourage competition and efficiency as a key concern in the entry of new suppliers into renewable energy markets [30,39]. If customers cannot freely choose energy providers, providers need not worry about losing customers, so there is no financial incentive for providers to improve their services [51]. As illustrated by Figure 1, the report places Spain among the EU countries with the highest legal entry barriers to competition in the renewable energy market. Among the forty-five parameters considered, more than half, twenty-five of them, are present in Spain, above the rest of the EU countries that average eighteen barriers to entry (accepting the limitations of this comparison) [65,66]. While Luxembourg, the Netherlands and Norway have the fewest barriers to entry, Bulgaria,

France and Spain have the most. For this reason, the European Commission warns Spain about these barriers that foster energy market concentration.

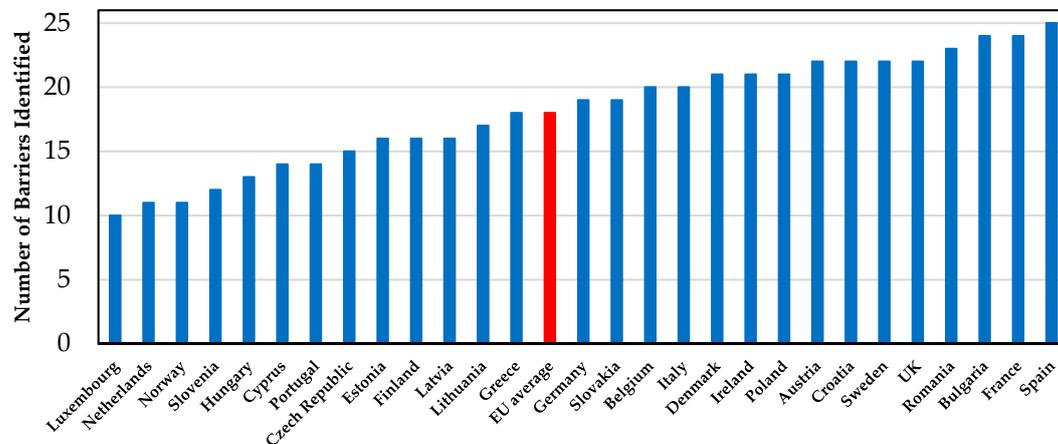


Figure 1. EU countries classified by number of barriers to entry identified in the energy market. Own elaboration from European Commission data [66].

The second proxy for rent-seeking is the disjunction between profits and losses *due* to the premiums policy in Spain's renewable energy sector [46,48]. The premium is a reward of money for selling energy received by renewable firms accepted by the government to operate in the industry. Figure 2 shows that until 2013 the annual premium has not stopped growing. Although premiums rose from 1000 million euros in 2004 to 8800 million euros in 2013 (an increase of 887% in 9 years), in 2014, this premium fell to 6600 million euros due to the austerity reforms of 2013 and 2014 [64]. However, in 2017 and 2018, premiums grew again, reaching 7000 and 7100 million euros, respectively. The cumulative total of premiums between 2004 and 2020 is almost 100,000 million euros. Meanwhile, tax collection was 194,000 million euros in 2020 [82].

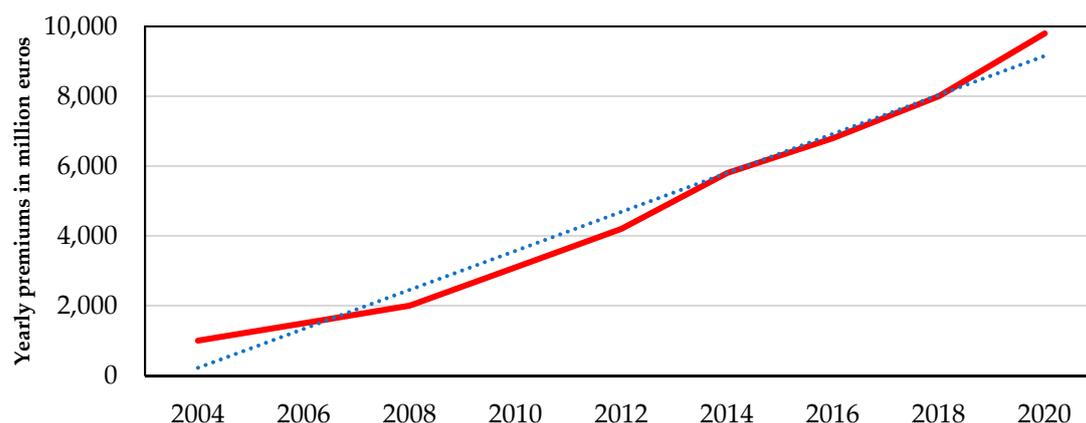


Figure 2. Premium to the special electricity regime accumulated in Spain (millions of euros). Own elaboration from CNMC data [64].

While the attractiveness of government regulations created a market concentration of four giant firms, the premium policy to support the reliability of private firms allowed for the amortization of investments. As shown above, the firms accepted to operate in the market had guaranteed profits, which led to a boom in investment in renewable energies [9,11]. In addition, the law guaranteed the purchase of all electricity produced during the facility's first 30 years of operation with premiums between 20% and 85% of the total budget for the renewable energy installation. This purchase rate is updated annually

based on the CPI-0.25% until 2012 and the CPI-0.50% from 2012 for the first 25 years of operation [64]. Thus, Figure 3 shows how the increase in premiums led to the growth of annual renewable energy investment from 8% in 2004 to 20% in 2020.

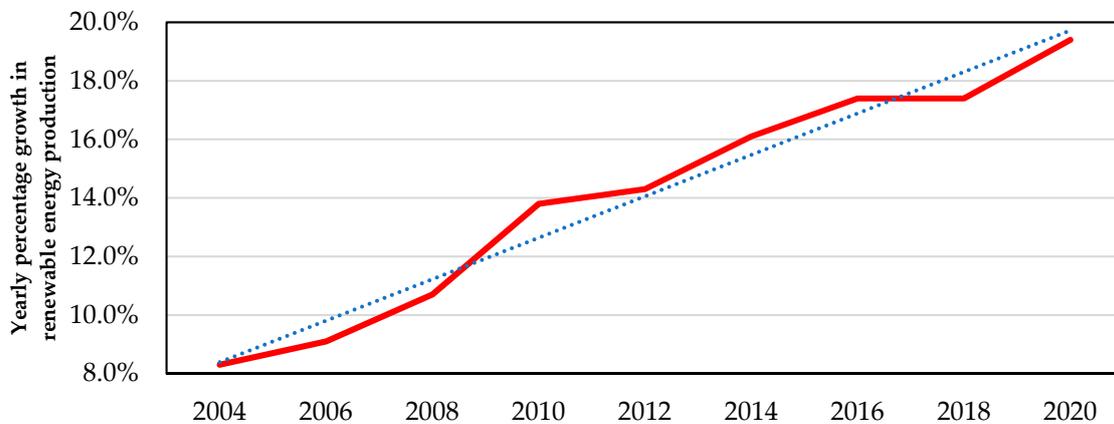


Figure 3. Annual growth of energy produced by renewable technologies in Spain. Own elaboration from CNMC data [64].

However, when firms require higher entry barriers to survive, there are theoretical and empirical reasons to infer the presence of rent-seeking behavior. Indeed, Spain's support policies for renewable energies exhibit signs of dynamic inefficiency as the disjunction between profits and losses. For example, starting in 2000, the premium policy for renewable energy firms was not enough to cover the entrepreneurial losses [83]. An increasing tariff deficit was created as a deferred debt of consumers with electricity forms. Figure 4 explains the consequences of the energy investment bubble. It progressed from an accumulated electricity tariff deficit of 1500 million euros in 2004 to more than 37,000 million euros in 2020. Therefore, firms in the renewable industry demand increasing rents—that is, more effective regulations and premiums to finance their activities [84,85]. As a consequence of this rent-seeking behavior, some energy firms have presented many claims to prevent the elimination of premiums, alleging that the legislation enacted by the Spanish government is retroactive and discriminatory [9,10,86]. Indeed, the reduction in premiums would affect the budget of all renewable energy installations, but the four multinational firms would strengthen their dominant position in the energy industry over smaller firms with less creditworthiness.

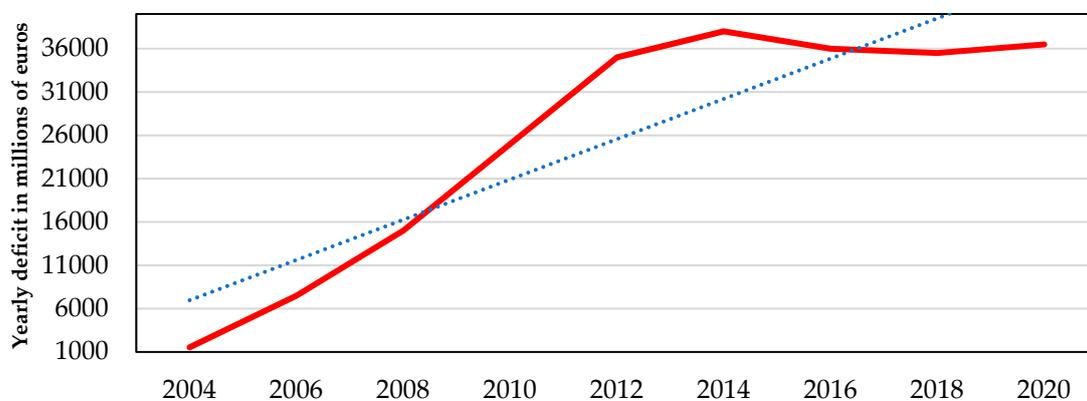


Figure 4. Annual accumulated electricity tariff deficit in Spain (millions of euros). Own elaboration from CNMC data [64].

The final proxy is the distortion of the price system, where energy consumers are forced to pay rent-seeking through increasingly expensive electricity bills. Notably, renewable energy facilities have the right to sell the electricity they produce to the distribution

company, which corresponds to them receiving a price set by law. Hence, the *Comisión Nacional de los Mercados y la Competencia* (CNMC) explains that the real price of electricity is only 45.6% of the bill [64]. Of every 100 euros of electricity bill, the division of the electricity bill is as follows: (1) 45.6 euros correspond to consumed electrical energy (24.8 to generation, 4.6 to transport and 16.2 to distribution); (2) 22.5 euros are used to pay the premiums for renewable energies (subsidies); (3) 18.7 euros are taxes (VAT and electricity tax); (4) 6.1 euros correspond to annuities of previous deficits; (5) 3 euros are destined to extra-peninsular compensations; (6) 4.1 euros include other items, such as nuclear moratorium, energy saving and efficiency. It should be noted that the cost of premiums is similar to the cost of generation and higher than that of transmission plus distribution. In this regard, the EU statistical office reports that Spain has one of the most expensive electricity bills for domestic consumers in Europe [65,87]. As shown in Figure 5, the price of electricity in Spain has not stopped rising since 2004. The price per kWh of electricity in Spain, with taxes and costs included, is 0.26 EUR/kWh in 2020, far from 0.089 EUR/kWh in 2004.

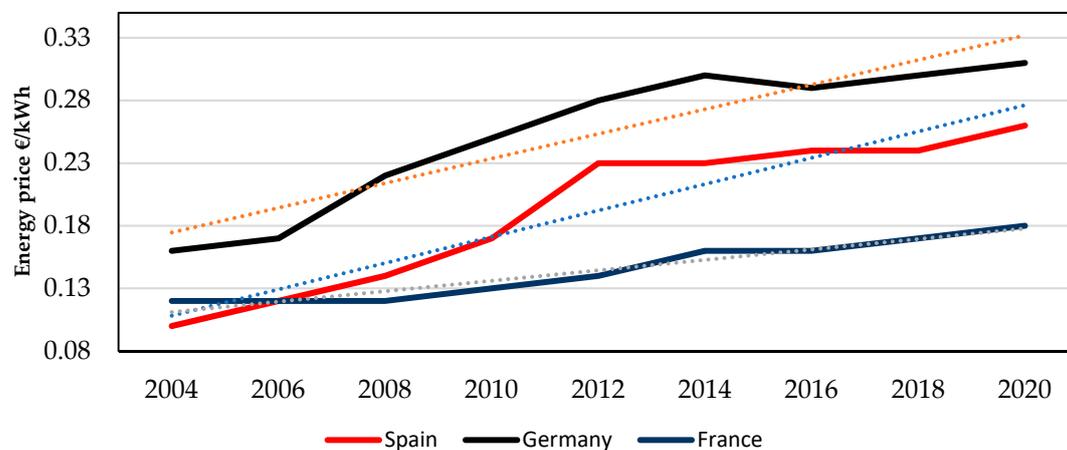


Figure 5. Evolution of the real price of electricity for domestic consumers. Own elaboration from Eurostat data [65].

It could be argued that rent-seeking is tolerable due to the positive externalities of the barriers to entry to renewables because it significantly impacts others (e.g., caring for the environment and mitigating climate change) [88]. However, the political economy of rent-seeking developed in Section 2 explains the inability of central planning to obtain the required information to make its commands truly coordinating. Given that all people have subjective preferences, it is impossible to design a social welfare function to establish an “optimal Pigouvian subsidy”. Even in a static world with a dictator capable of controlling the behavior of individuals, it is a delusion to assume that individual preferences can be added to a global preference [31,59,61]. Accordingly, we need to explore how to overcome these coordination problems.

3.3. Detection Results and Proposals

The purpose of the Green New Deal and international energy transition agreements is that the EU must be climate neutral by 2050 [5,89]. Thus, the Spanish support policy consists of centralized planning of the renewable energy industry to meet its commitments, defined as “determining the optimal mix of renewable energy sources to satisfy a given energy demand in a sustainable process” [90]. Hence, the strategy of the Spanish government is to promote a mix of regulations and premiums to control the production, distribution and consumption of energy. However, firms that need massive amounts of premiums to survive are neither efficient nor competitive; otherwise, they would not need them. Sections 3.1 and 3.2 explained how this institutional environment fosters market concentration in four giant multinationals that control 85% of the energy supply in Spain. The growing demand

for rent-seeking has the cost of strengthening a legal oligopoly and continuously expanding the system's deficit, resulting in increased electricity prices for consumers. Consequently, the reliability of the Spanish energy system requires the development of alternatives.

Notwithstanding the significant advancements in the Spain energy system, we want to propose a sustainable proposal based on the main lessons of the political economy of rent-seeking. In this sense, we argue that an energy policy should focus on the entrepreneurial process of identifying and solving human problems. When private property rights are strictly enforced through price signals, the market process ensures the coordinating trend of energy supply and demand, reducing environmental damage and the danger imposed on others [91]. In this case, the unhampered market process promotes the freedom of entrepreneurship to identify and correct existing discrepancies between what could be done to better coordinate consumers' preferences with respect to what is being done. For instance, the freedom of entrepreneurship involves the production and consumption of energy by an individual at home (e.g., self-consumption from solar panels) or private firm and the freedom to develop new distribution methods [92–96]. Thus, we traced the core of the problems associated with rent-seeking to the legal oligopoly of renewables built by the government's support policies.

The political economy of rent-seeking explains that “inclusive institutions” enhance the dynamic efficiency of the market process through checks and balances and restrictions on executives, legislatures and bureaucrats. Hence, the responsibility for resolving environmental issues is the legal system and not government regulation [97]. From the standard of dynamic efficiency, it is only permissible to coerce someone if it has been proven in court (or in arbitration) that the defendant is an aggressor of the property rights of others beyond a reasonable doubt [98]. If A is causing pollution of B's air, and this fact can be proven beyond a reasonable doubt, then its aggression should be prohibited and damages paid. Then, the legal system could increase the penalties for damages resulting from environmental pollution. Any other administrative command necessarily “makes actions illegal that are not overt initiations of crimes or torts” [99].

It is reasonable to discuss a modern welfare model to end the legal oligopoly, rent-seeking and increase the dynamic efficiency of the renewable energy industry [100]. Specifically, it is necessary to rethink transferring the leading role of the administrative commands to the legal system. The activities considered environmental aggression against the property (private and public) of others must be defined. It means replacing the support policies for renewable energies with the freedom and responsibility of the entrepreneurship of individuals and firms in the production, distribution and consumption of renewable energy. In this way, we would obtain a competitive market with equal entry conditions. Moreover, rent-seeking would not be possible because there are no government rents, so firms tend to be dynamically efficient by widening the range of alternatives open to people. Finally, the end of rent-seeking will make consumers pay the market price for energy, which would be lower considering the extra 47% of the bill they currently pay due to taxes and deficit annuities [65]. These guidelines explain how the political economy of rent-seeking opens up a whole range of novel solutions to improve people's quality of life through a sustainable green energy transition and comprehensive growth.

4. Conclusions

This paper aimed to develop a political economy of rent-seeking to explore the economic effects of support policies for renewable energy firms to achieve a green energy transition. We apply this framework to the case of Spain, one of the countries with the highest regulations and premiums for renewable energy since the beginning of the twenty-first century. This theory served us to discover how Spanish energy policy generated a dynamically inefficient process based on rent-seeking behavior in the renewables industry. On the one hand, the government regulation and premiums have raised legal barriers to entry, strengthening market concentration in four giant firms. On the other hand, the close dependence of renewables on government aid has led to a rent-seeking behavior, which

consumers must finance with higher electricity bills. Accordingly, Spain's remarkable advancement in complying with international commitments contrasts with the development of an energy system that is economically unsustainable and leads to skyrocketing electricity prices.

We proposed some market-based policies to improve the energy system in Spain. These policies are focused on transferring the role of the administrative officers to the legal system. Thus, the legal system would define the activities considered as environmental aggression against the property rights of others and the penalties to inhibit those practices. This scheme implies the replacement of support policies for renewable energies by the free exercise of entrepreneurship in the production, distribution and consumption of energy through different arrangements. The consequence of this freedom to entrepreneurship would foster a highly dynamic and competitive market. Likewise, if there are no government rents, rent-seeking is impossible, meaning that consumers will not pay for rent-seeking firms because their bills will be determined at market prices. Further theoretical and empirical works must specify these policies to promote clean and cheap energy production harmonious with the EU Green Deal's objectives.

Author Contributions: Conceptualization, V.I.E.; methodology, V.I.E., J.A.P.-R.; formal analysis, V.I.E., J.A.P.-R., F.R.-L.; investigation, V.I.E., J.A.P.-R., F.R.-L.; resources, V.I.E., J.A.P.-R., F.R.-L.; writing—original draft preparation, V.I.E.; writing—review and editing, J.A.P.-R., F.R.-L.; funding acquisition, V.I.E., J.A.P.-R., F.R.-L. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Acknowledgments: For comments and criticism, the author wishes to thank the three anonymous referees. The usual caveat applies.

Conflicts of Interest: The authors declare no conflict of interest.

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