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Nationalization and Privatisation of Petroleum Industry: An Evaluation of the Pros and Cons

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Abstract: The purpose of this piece is to evaluate the overall pros and cons of the nationalisation and privatisation of the petroleum industry. According to Georg Erdmann (n/d), the economists assume that nationalized companies are usually less efficient than private companies. This belief has been confirmed by HARTLEY (2007) for the upstream oil industry. But we see today that governments tend to take over the control of oil, gas, uranium and power industries by restricting energy business rights in the company to national companies or by controlling the businesses of private companies by a significantly more restrictive regulation; whereas in the last two decades, many Governments did just the opposite when privatizing state energy companies. Nationalization of the petroleum industry is a pertinent topic for several reasons. Today, state owned companies hold around 85 percent of oil and gas reserves (Erdmann, n/d). As of 2012, between 73 and 95 percent of global oil reserves are controlled by national oil companies (NOCs) (Mahdavi, 2014). In fact, and according to Francisco Monaldi (2010), there are various factors leading countries to nationalize their petroleum industries, such as the civil society, regionalism, and the potential conservation and economic benefits from nationalizing the industry. According to Carneiro et al. (2003), deregulation of the oil and gas industry has led to privatization of the former state-owned oil and gas companies, in several countries. As a result, the competitive environment has become more hostile. The changes of ownership, together with modification in the competitive environment, have caused significant modifications in the competitive strategies. Companies were not used to clear competitive strategies; but after privatization they started to follow clear patterns

of differentiation strategies while at the same time they seek cost parity in the industry. (Carneiro et al., 2003).The methodology for this paper was based only on literature review, with a view to improving our knowledge on the pros and cons of nationalisation and privatisation of the petroleum industry. We conclude that countries which possess natural resources such as oil prefer to nationalize the companies in anticipation of the high revenues that come with the high fluctuations of price of this commodity. Of course this fluctuation of prices is driven by some factors such as high demand of the resource and industrialization. The World Bank estimates that privatization is either under way or being planned in at least 50 countries.

Keywords: Nationalisation, Privatisation, Evaluation, Pros and Cons.

1. Introduction

Nationalization and privatization are two very pertinent topics to discuss at the moment because with the price of oil increasing steadily since its collapse in 1998, oil is becoming a more expensive commodity and the organizational structure of that industry will always affect how it is extracted and distributed.

The present essay is meant to approach in a very simple manner the issues of nationalisation and privatisation of companies in the Oil Industry, and in the perspective of evaluating the pros and cons of such government decisions in pursuit of either of the options.

The structure used is also very simple, beginning with the conceptual framework of the main subjects: namely nationalisation and privatisation, from which we describe using a theoretical framework that leads to our methodology of study. In a comparison, two case studies will help us to bring up the pros and cons of each subject by way of evaluation as well as the implications of government decisions in such economic environment.

2. Conceptual Framework

Concept of Nationalization – refers to when a government takes control of a company or industry, which generally occurs without compensation for the loss of the net worth of seized assets and potential income. This action may be the result of:

- A nation's attempt to consolidate power;
- Reduction of foreign ownership of industries representing significant importance to local economies; or
- To prop up failing industries.

According to Monaldi (2010), nationalisation is the policy by which an asset is placed under state-control.On a time scale, nationalization phases in the oil industry correspond to periods of high crude prices and high revenues. (Erdmann, n/d). The author emphasises a higher degree of nationalization in extraction than in refining, which corresponds to the profitability differences along the value chain of the oil and gas industry.

According to John Wirth (1985), state owned control is defined as the policy by which governments own, control, manage and exploit natural resources for national ends, in the name of

common good. Thus, in the definition alone, there is an implication of nationalization being for the benefit of the society as a whole. If one imagines a continuum of organisational structure, nationalisation and privatisation would be at opposite ends.

However, nationalisation could include joint ventures where the state controls the industry but allows for private companies to participate in the resource extraction and retain some of the profit.

It is also important to pay attention to the so-called creeping nationalisation; which is the impending threat of nationalisation before the policy is made official. This kind of nationalisation has not taken as drastic a form in the first two decades of the 21st century as outright expropriations have done in the 1970's, but it does seem highly prevalent. Actions indicative of creeping nationalisation include cumbersome labour and environmental regulations, taxation, and price and monetary controls.

Nationalisation of the Petroleum Industry

So why do leaders nationalize the oil industry? In line with a general utility-maximizing theory, (Mahdavi, 2014) argues that leaders nationalize to maximize state revenues while minimizing costs. According to this author, the latter includes international retaliation and domestic political constraints.

Using a novel longitudinal dataset on the establishment of national oil companies (NOCs), the empirical evidence presented in Mahdavi's paper lends support to four primary findings. States are most likely to establish NOCs:

- In periods of high oil prices, when the risks of expropriation are outweighed by the financial benefits;
- In non-democratic systems, where executive constraints are limited;
- In "waves", that is, after other countries have nationalized, reflecting reduced likelihood of international retaliation; and, though with weaker empirical support,
- In political settings marked by resource nationalism.

Concept of Privatization

When a government-owned business, operation, or property becomes owned by a private, non-government party.

According to Moye Ajao (2008), from The Technical University of Berlin, privatization is the sale of state owned assets; or the transfer of a majority ownership of state-owned enterprises to the private sector by the sale of ongoing concerns or assets following liquidation. The author adds also that privatization refers to the sale of all or parts of a government's equity in state-owned enterprises to the private sector. Define finally privatization as the divestiture by the state of enterprises, land or other assets.

Privatisation of the Petroleum Industry

According to Carneiro et al. (2003), in the oil industry, privatization represents a reversal of the nationalization processes that took place at the beginning of the last century, resulting from the advance of communist thinking and the restructuring of economies after the two World Wars.

Privatized firms, once accustomed to a predictable environment - monopolistic or tightly regulated - come face to face with the challenges and opportunities of increased competition. As a result, these companies change their attitude and attitude towards the market and competition in order to adapt to the new environment.

Concept of Petroleum Industry

Petroleum is considered a global commodity and the main reason of the development of the word we see today. It is considered the biggest Industry sector in the world in terms of capital investment and value, and also it products are used in almost all the areas of industrialization globally. In addition to that, drives thousands of hundreds workers worldwide, generating hundreds of billions of dollars globally each year. The Industry is divided 3 categories or sectors named **Upstream, Midstream and Downstream**, and the companies operating in this industry are divided in NOC (National Oil Company's) and IOC (International Oil Company's)

Concept of Profitability

Profitability is a financial and economic concept originated from the word profit, used to measure or determine the efficiency, success or failure of a company or product. Some authors define profitability as a business's ability to produce a return on an investment based on its resources in comparison with an alternative investment.

3. Theoretical Framework

Utility-Maximizing Theory

Mahdavi (2014) is aligned with a general utility-maximizing theory, in which he argues that leaders nationalize assets to maximize state revenues while minimizing costs.

Leaders nationalize to maximize state revenues while minimizing costs. The latter includes international retaliation and domestic political constraints. Using a novel longitudinal dataset on the establishment of National Oil companies (NOCs), the empirical evidence presented in this paper lends support to four primary findings state that States are most likely to establish NOCs:

- In periods of high oil prices, when the risks of expropriation are outweighed by the financial benefits;
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The Positive Theory of Nationalization

Erdmann (2007) is aligned with the positive theory of nationalization; which emphasizes on "the basic business of politics, the transfer motive"; as well as the economic theory of firm.

This theory is based on a similar interest of private investors and the State in the cash flow of firms, and does not necessarily assume inefficiency in the state owned firms, nor a sudden,

unexplained reversal in ideological preferences. Both private investors and the State are rational but their respective cost of capital can and will diverge over time, changing the private/public valuation ratio, the basic determinant of the exchange of firm ownership. Both the state and the private investors want to control firms in order to use their cash flows either for increasing the wealth of shareholders and managers, or for government consumption and transfers to politically influent clienteles.

It also provides a view of the privatization and the nationalization waves, the possible reversals of policy from one to the other, as well as differences in the allocation of ownership between the public and the private across countries. Other local political variables can also influence these policies, to amplify or dampen them since they reflect the ultimate redistributive aims of the government. But that influence will only be effective as far as the privatization or the nationalization does not decrease the government's overall resources. Otherwise, for instance, a government pursuing a nationalization policy in order to reduce unemployment, whereas the valuation ratio implies that the state valuation of firms is less than the private investors' valuation (due to a higher public cost of capital), would implicitly be willing to overpay for the firms acquisition, thus accepting a loss of resources in the process (an unfavourable trade with private investors). This loss of resource, and the associated loss of political support that it determines, constitutes the opportunity cost of pursuing a political objective contrary to the rational, valuation ratio determined, policy of support maximization. The higher this opportunity cost, the lower the probability of a government following such an unconditional – or ''uneconomic'' – strategy.

Economic Theory

Carneiro et al. (2003) also applied basically the economic theory of firm, emphasizing Porter's competitive strategies; as well as economic regulation theory.

Here the concept of "externality" is considered unnecessary and the advantage of "detrimental effects" is emphasized, which can be examined as any other factor of production. Coase is not in favor of State action, since it assumes that it is related to high costs, although it admits the possibility that "most externalities should be allowed to exist if we want to maximize the value of production". In this sense, for Coase (1994, 27) the concept of externality imposes a governmental intervention (tax and regulation), even before that other options, such as non-action, abandonment of previous government action or simply the facilitation of commercial transactions, may be considered

The new economy of regulation deals with the agency problem that arises as a consequence of an asymmetrical structure between the principal and the agent. In other words, regulation is an application of the principal-agent methodology in the contractual relationship between the regulator and

the regulated agent, as proposed by Laffont and Tirole (1994). The principal is the State (the regulatory agency) that does not have all the information and holds the property rights of an asset or the most relevant administrative function. The regulated agent is the operator of the service that administers the ownership of the assets and is therefore the part informed about the details of its specific contents (inputs, technology and cost structure). Thus, the problem of regulation is related to transaction costs, problems of political economy and incomplete information.

Economic regulation has its origin in the need to control market failures (normative approach). However, when the State intervenes to correct these failures, some difficulties arise, especially for the handling of information4 2, the capture of the regulator by the private sector and inefficiency. These basic theories of economic regulation are briefly discussed below: (1) regulation based on public interest (normative approach), (2) private interest regulation or regulator capture) and, 3) the new economy of regulation from the position of the new institutional economy.

4. Methodology

Aiming to maximize the research and provide answer to the problem, we used the following methods:

- Nature – The research was theoretical and based on the collection of secondary data as well as reviewed bibliographies. Again, the archival study aimed to improve the extant literature in this knowledge area. Technical dimension involved the use of case studies.

4. Findings: Evaluation of Pros & Cons

An evaluation of the efficiency of a nationalisation policy requires an evaluation of the particular industry's industrial efficiency which requires very detailed information and a long time scale to collect the data, which are both beyond the scope of this project. Analysing the energy efficiency of a country proved too difficult due to the inability to disaggregate the inputs and outputs of energy in order to focus solely on the energy efficiency of oil and natural gas.

Nationalization

Pros:

- It ensures that a government can stay homogenized and the economy can be nationalized.
- Increases the chances of maximization of state revenues while minimizing costs. Reduces the likelihood of international retaliation and domestic political constraints.

Cons:

- Failure due to different political and economic objectives between government and state officials - officials may rely on the natural resource revenue to fulfil their objectives.
- Natural resources are often located in areas where marginalized minorities live who have poorly defined property and user rights - marginalizing these communities further could result in repercussion.
- Governments suffering from budget deficits may have difficulty securing

additional capital for the needs of the NOC.

Privatization

Pros:

- Privately-owned companies run businesses more economically and efficiently because they are profit incentivized to eliminate wasteful spending.
- These companies usually ensure they improve their operational efficiency in order to reduce their costs and improve on profits.
- Privatization reduces the government's political interference.

Cons:

- Government loses out on potential dividends after privatization;
- Exposure to strict local laws, regulations, taxes;
- Increased competition – existence of policies to allow more firms to enter the industry and increase the competitiveness of the market.
- These companies do not directly deliver the government revenue, and they also have more freedom to pursue their own interests, which may negatively affect consumers, without government involvement.

Comparative Analysis

The following two case studies are drawn from the work of Monaldi (2003), and we present them as they were initially presented by the author.

Case 1 – Venezuela

Ever since Venezuela began exporting oil in 1917, Venezuelan leaders have sought to extract greater compensation. In 1943, Venezuela worked out a "50-50" policy where private companies provided half of their profits to the Venezuelan government in exchange for long-term operating contracts. As time progressed, companies had to provide a greater share of their profits to Venezuela. According to Grayson, by the 1970's this partially nationalized system left Venezuela dependent on the international economy and aggravated income disparities within the country.

Venezuela's nationalistic policy was altered in 1998 when Venezuela increased privatization. After the oil boom of the 1970s, Venezuela began reform efforts leading to growth of state enterprises. These efforts began in 1971, when Congress passed the Gas Nationalization Law. In this law, Venezuela was entitled to collect all associated gas for which the concessionaire had no economic use for at the price of its collection cost. Reservoirs of free gas were also nationalized.

In 1973, Congress passed the Domestic Market Nationalization Law. Under the law, hydrocarbons were considered basic commodities. The 1973 law was different from the 1971 in that it increased the government's hold over the economy rather than expropriate concessions as the 1971 law did. The state intervened in the domestic market to lower prices and protect consumers from rising world market prices. Because they were owners of the natural resource, national consumers were not to be subject to the increase of the international ground-rent.

Venezuelan nationalization occurred on January 1, 1976. By the late 1970s, state enterprises accounted for 85.9% of all

public-sector investment. Globally, nationalization had two consequences: the collapse of the rent capitalism (the rent that foreign companies pay for the use of the land in the oil producing host country) and the country left on its own could not find new energy infrastructures (the technological and structural capacity necessary for efficient energy production and distribution).

The oil-exporting countries raised ground-rent and prices which hurt the oil-consuming countries. The state enterprises were criticized for lacking clear objectives, technocratic expertise and coordination in planning, and unsuccessful implementation and evaluation of projects. Lack of control over spending of public monies and absence of bureaucratic accountability led to low-level corruption and mismanagement.

In Venezuela, the assured flow of oil revenues to state managers left little incentive to maximize efficiency of state enterprises. When nationalized, the oil industry could not tax multi-nationals to pay for their mistakes, as they could only tax themselves. Domestic consumption on a whole was a loss to Petroleum de Venezuela, S.A. (PDVSA). Prices eventually fell below technical costs after 1983. Prices in the domestic market were the sole domain of the government. Prices were disassociated from the international market and were lower for domestic consumers. Venezuelan consumers as resource owners felt they did not have to pay ground-rent.

Furthermore, since the country had abundant energy resources, low prices were supposed to foster development of energy-intensive industries. The issuance of low prices made it difficult for governments to decide on reasonable prices. After 1986, due to mismanagement and failure, there was no link between fiscal oil revenues and development. Thus, in the mid-1990s Venezuela made efforts to privatize its national industries leading to the Oil Aperture policy.

In 2002, Hugo Chavez, however, took political control of PDVSA. He diverted funds of PDVSA to finance government's social programs. In 2004 the job of Energy and Oil Minister and PDVSA Chairman became the same increasing presidential control of company. As a result, PDVSA is currently underinvesting (investing insufficient amounts to adequately perform a task) in exploration and production. PDVSA is even underinvesting in comparison to other state-owned oil companies.

This recent creeping nationalization that Chavez has been employing since he took office is seen as an affront to the U.S. Chavez is, moreover, using Venezuelan oil as a foreign policy instrument to form regional alliances with his neighbours by offering them preferential oil leases. With a possible energy crisis ahead, analysts bel[illegible]t Chavez is trying to position Venezuela (which has the largest oil reserve in the Western Hemisphere) into a spot where an energy thirsty world would be forced to integrate according to Venezuela's terms. If Venezuela were to stop selling

oil to the U.S., an $11 per barrel crude oil price spike could result. PDVSA is still considered to be one of the most successful large national oil companies in the Third World.

Case 2 – Bolivia

On May 1, 2006 Bolivia's president, Evo Morales, issued an executive decree (#28701) declaring the "nationalization" of Bolivia's oil and gas reserves. The decree was accompanied by a set of images aired worldwide of Bolivian troops sent to many of the nation's oil fields by Morales to "protect" the nation's oil and gas.

The popular demand for gas and oil nationalization is a long-standing one in Bolivia, and has been at the forefront of national politics for three years. In July 2004 more than 90% of the voters in a national referendum supported a measure to recover control of Bolivia's gas and oil reserves. Nationalization was also a central pledge by Morales during the 2005 elections.

In general, foreign media coverage of Morales' announcement has significantly overstated what the decree actually does, and painted the move as one far more radical than is evidenced by the content of the decree and the government's actions. This brief seeks to explain what the decree actually does provide some historical context; discuss some of the issues the decree raises; and note what developments to watch for in the months ahead.

Bolivia privatized its oil sector in the mid-1990. Prior to that, the state owned oil company Yacimientos Petrolíferos Fiscales Bolivianos (YPFB) divested most of assets. After privatization, foreign companies owned most of Bolivia's oil sector. Bolivia also privatized its natural gas sector in the mid-1990's which resulted in more foreign investment leading to an increase in exploration resulting in an increase of 600% of proven natural gas reserves between 1997 and 2005. In May 2006, Morales declared the renationalization of the country's hydrocarbon reserves giving control of reserves back to YPFB.

On May 1, 2006 President Morales gave the oil companies 180 days to sign new contracts with the state guaranteeing public control and management of activities. He also issued a profit sharing arrangement where companies that have operation in the biggest fields will resign 82% of their profit to the state and keep the remainder and companies in the smaller fields will resign 60% of their profit to the state and retain the remaining 40%.

The Spanish company Repsol-YPF and the Brazilian company Petrobras will be the companies most affected by arrangements in Morales' proposals for nationalization. In the case of Bolivia, this recent nationalization of its natural gas industry on May 1, 2006 might have serious repercussions considering that foreign companies accounted for 20% of the country's gross domestic product and approximately 20% of its tax revenue. Bolivia had previously nationalized oil production in 1937 and 1969.

However, this time around, Bolivia has not kept to its six-month timeli[illegible] laid-out to restructure its s[illegible] company in its current nationalization

process, though it seems likely that Bolivia will follow through. One theory behind President Morales's motives is that he is trying to embrace a regional perspective, combining forces with President Chavez of Venezuela, ignoring a more global one88. Rising earnings from natural gas exports is the driver of Bolivia's economic growth.

Nationalization reportedly deterred foreign investment in natural gas sector in 2005 after the approval of a referendum calling for renationalization of the once state-owned Andina and Chaco oil and natural gas operators. The referendum also declared greater taxes on foreign Hydrocarbon producers.

Bolivia had 440 million barrels proven crude oil reserves in 2006. Bolivia also possessed proven natural gas reserves of 24.0 trillion cubic feet (Tcf) in 2006. It produced 64,000 barrels per day of oil during the first three-quarters of 2006 and consumed about 48,000 bbl/d of oil in 2006. Bolivia has two refineries but both are operated by Petrobras (the Brazilian oil company). Due to the nationalization decree, YPFB is seeking to appropriate the majority stake in both refineries.

Looking at a general picture of nationalization, Asher poses a number of reasons for why the policy often seems to fail. One particular cause for the failure is different political and economic objectives between government and state officials. Even among government officials there is disunity in objectives. When there is such a difference, officials may rely on the natural resource revenue to fulfill their objectives.

Furthermore, a problem for natural resource extraction regardless of the organizational structure is that natural resources are often located in areas where marginalized minorities live who have poorly defined property and user rights. Marginalizing these communities further could result in a backlash as has occurred in Nigeria, where communities who have been neglected by the profits made from the resource in their land demand a greater share of said profit.

Since officials can easily direct financial flows, government officials that are trying to increase accountability and transparency in the industry find it difficult to do so. Thus, many of the reasons for nationalization's failure are due to human actions and not necessarily policy failures. Even so, nationalization enables government and state officials to manipulate the revenues easier than they would be able to if the industry were privatized and where financial institutions and governance are weak there is no means of ensuring proper accounting.

The difficulty lies in finding the proper control measure. Too much government control means that a NOC is just an extension of civil service, but insufficient control means a NOC may lose interest in non-commercial objectives and become like any oil multinational company that focuses solely on commercial success but not necessarily on a larger socio-economic and nationalistic objective.

However, without competition, a NOC may become complacent and l 21 develop goals of its own as op those which it was created for. It is

generally found that NOCs are likely to be: overstaffed and pay more than market wages, located in politically desirable rather than economically desirable regions, charge prices either significantly below marginal cost to win political support or monopolize prices when political objectives dictate it to do so, lack environmental concern and are often the worst polluters.

Furthermore, NOCs tend to lack managerial and technical expertise because NOCs recruitment policies are more governed by tribal and religious considerations than merit. However, the inefficiencies of NOCs cannot all be blamed on the companies themselves. Governments have been found at times to provide insufficient resources to NOCs hindering the companies' ability to undertake tasks and halting production or any increases in production.

Governments suffering from budget deficits may have difficulty securing additional capital for the needs of the NOC. It is difficult to say though, whether governments are the culprits for the challenges facing NOCs or whether NOCs are adversely affecting the government. Suffice it to say that both the state and the national oil company need to work together to achieve efficient operations in either entity.

6. Findings

From the cases of study, we found that both states are highly reliant on oil or other minerals for their economic, and the low human development ratio contribute to weak political policies and decisions. They also rely on old and weak fiscal or regulatory institutions. This association with the international high prices contributed positively in the nationalization of Oil companies in Bolivia and Venezuela. In addition to the high oil prices, the governments of these countries began to act with authority in minimizing the freedom of expression; thereby fueling extremist protests and the power of other companies in their soil. Again, the budgeting for public spending on education diminished.

Furthermore, it seems that the governments of these countries were fooled by high revenues of these nationalized companies due to high prices of oil, forgetting their main goal as a state is increasing Gross Domestic Product and human capital). and started to act more as a company (with the single objective of making profit).

Maybe this is the main reason that the Dutch Disease is well known all over the world, especially on underdeveloped countries. This is probably the reason why many authors consider the Gift of Oil as a curse, and it is clearly shown as an example here.

7. Implications

As a result of the overall instability of supply, oil became an instrument of foreign policy for oil-exporting countries. Nationalization increased the stability in the oil markets and broke the vertical integration within the system. Vertical integration was replaced with a dual system where OPEC countries controlled upstream activities such as the production and marketing of crude oil while oil companies controlled downstream activities such as

transportation, refining, distribution, and sale of oil products.

The nationalization of oil supplies and the emergence of the OPEC market caused the spot market to change in both orientation and size. The spot market changed in orientation because it started to deal not only with crude oil but also with refined products. The spot market changed in size because as the OPEC market declined the number of spot market transactions increased. The development of the spot market made oil prices volatile. The risks involving oil investment increased. To protect against these potential risks, parallel markets such as the forward market developed.

8. Conclusions & Research Agenda

Although Privatization and nationalization are most likely to maximize social and local employment benefits, it must balance between the various objectives of privatization. Financial, economic, social and technological considerations are an essential component of this process. They should form an integral part of the design and implementation of privatization policies and programmes. Privatization works most successfully where it is backed up by social consensus and support and not just political or economic will. Therefore, whether from the point of view of political commitment to giving higher priority to social and employment goals or from that of creating the right environment for the economic success of privatization and restructuring programmes, it makes sense to incorporate the technical, social and employment dimensions throughout the process, from goal-setting to implementation, evaluation and follow-up.

Also in parallel it must be built on strong fiscal and regulatory institutions. These institutions will increase transparency and accountability and create a check on the government to ensure that it does not spend the revenue frivolously and ensure that the economy is not vulnerable to the volatile nature of hydrocarbon prices.

The resource will still remain under domestic control and it is believed that a privatized environment with competition and no barriers to entry will foster transparency and since the government will want to tap into the revenues of those private organizations it will develop rules to regulate the private sector. In economics we can find various suggestions on how to improve Human development and GDPlevels:

- One is increase production of other goods, reducing external dependence of the products and importations.
- Investing in education, will create an impact on the man force at all levels, reducing importation of technology and man intelligence;
- Lead by example by creating very rigid and effective politics to discourage corruption and impunity;
- Create partnerships and chamber of commerce and exchange in various areas (education, agricultural production, mineral resources, etc.).

Looking specifically at the experiences of both Venezuela and Bolivia, we can conclude that the empirical evidence presented by Mahdavi apply consistently: States are most likely to establish NOCs (1) in periods of high oil prices, when the risks of expropriation are outweighed by the financial benefits; (2) in non-democratic systems, where executive constraints are limited; (3) in "waves", that is, after other countries have nationalized, reflecting reduced likelihood of international retaliation; and, though with weaker empirical support, (4) in political settings marked by resource nationalism.

Mahdavi's statistical findings show that results from empirical analysis lend strong support for the revenue maximization, resource nationalism, and diffusion (international retaliation) hypotheses, and weak to modest support for the domestic constraints hypothesis.

We also keep in mind Erdmann's conclusion that the appetite of governments to nationalise or regulate energy industries increases with the profit rate. He adds that by extrapolating the determinants for nationalization and privatization, we can predict the associated trends for different energy sectors and the associated productivity developments. Even more important is the identification of conditions under which trend changes are likely.

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