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**Energy supply and economic development
in Italy: the role of the state-owned
companies**

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ENERGY SUPPLY AND ECONOMIC
DEVELOPMENT IN ITALY:
THE ROLE OF THE STATE-OWNED COMPANIES*

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Abstract

The paper focuses on the role played by state-owned enterprise in the energy history and policy in Italy. A fundamental issue of the economic history of the country is if and how scarcity of raw materials, and particularly of primary energy sources, affected its modern economic growth. As different as they are, answers to such a question cannot but recognize the role played in the long run by direct state intervention: either in order to reduce the energy dependence of the country from abroad, or to guarantee the supply of fuel and oil products to the Italian market, particularly after the 1973 oil crisis.

Keywords: *Italy, energy, history, state-intervention*

JEL Classification: N43, Q43, Q48

1. Introduction: *The puzzle of Italian economic growth*

To historians and economists Italy's modern economic growth always appears as a sort of a puzzle, whose solution cannot be searched for in the pattern of change followed by the greater part of other industrialized countries such as, for instance, Great Britain, the U.S., Germany or Belgium. With respect to these, the clear differences exhibited by Italian growth firmly convinced historians to emphasize its elements of weakness and backwardness rather than those of originality and strength.

To figure out these structural differences – essentially structural wants – I recently suggested a paradoxical representation of Italian economic growth: that is a process of industrialization and growth without technology, without industry, without energy¹. With 'without' I do not mean of course an absolute lack, rather a relative shortage of those components – big industry, frontier technology, rich supply of primary energy – which represented as many elements of strength of modern economic growth

And yet, Italy not only industrialized, but also became the sixth industrial power in the world. In my opinion this apparent paradox can be explained only by a thoughtful long-term analysis of the economic change of the peninsula². Those weaknesses in fact could be at least partly compensated by: i) a centuries-old craft and commercial tradition, which stimulated the rooting of a diffused entrepreneurial spirit all over the central and northern parts of the peninsula; ii) the post-unification (1861) growth of direct state activity to surrogate, partly at least, the scarce finance as well as the feeble capitalistic bent of entrepreneurs (i.e. to grow out of the family threshold and to grow according to the market rule)³.

Besides, a closer look at those elements of weakness can transform them, at times, in as many trumps: a plethora of small and medium size firms acting all over the country, but also able to gain market niches abroad; a diffused capacity to import technology and to adapt it to the internal productive necessities; and, finally, the efficient use of primary energies (most of all, water) as a substitute for the elsewhere dominant source, coal.

In this picture *energy* and *State-intervention* are the two keywords relevant to our issue. In the following pages the association between the two will be analyzed in a long-term perspective.

In the next paragraph some general issues concerning the impact of scarce energy sources on the economic growth of the country will be sketched; the third section will offer a few general remarks on the evolution of Italian public enterprise; the fourth will investigate the origins and development of an Italian national oil company; the fifth will examine the most intensive years of growth

¹ Toninelli 2001, 2003

² Toninelli, 2003, pp. 185-8

³ Leff, 1979

and transformation of the company into a powerful state-holding, ENI, that is period dominated by the personality of Enrico Mattei. The sixth and the seventh paragraphs will follow the destiny of the holding, after Mattei's death, throughout the oil shocks. Few words of conclusion will close the paper .

2. Energy supply and Italian economic growth: the framework

A good starting point is the following question: “how scarcity of raw materials, and particularly of primary energy sources, affected Italian economic growth?”

Since the unification of the country the question has been debated both by contemporary observers and historians. The pessimistic view has been prevailing: it underlines mostly the negative effects induced by scarce endogenous energy supply – especially coal – in the critical period of the turn of the 19th century. For instance , it has been recently observed⁴ that coal saving (as well as capital saving and labor intensive) techniques forced Italy into a path toward industrialization very different from the English one, based on coal, the general purpose technology of the time, where the frontier innovation was concentrated; this, in turn, constrained industrialization into a strongly dualistic model, with a few modern industrial concerns on the one hand and an excessive number of small and medium size firms on the other; in the following period, when new primary sources (hydroelectricity and hydrocarbons) became feasible, the economy was already locked into a growth model characterized by strong dualistic features and weak technical innovation.

On the contrary, in the more optimistic perspective, emphasis has been put, first, on the efficacy of alternative primary energy sources (hydroelectricity and natural gas), in which the country gained an early technological leadership⁵, and, second, on the originality of the Italian model of industrialization, which, as said, was characterized by small low energy-consuming units⁶.

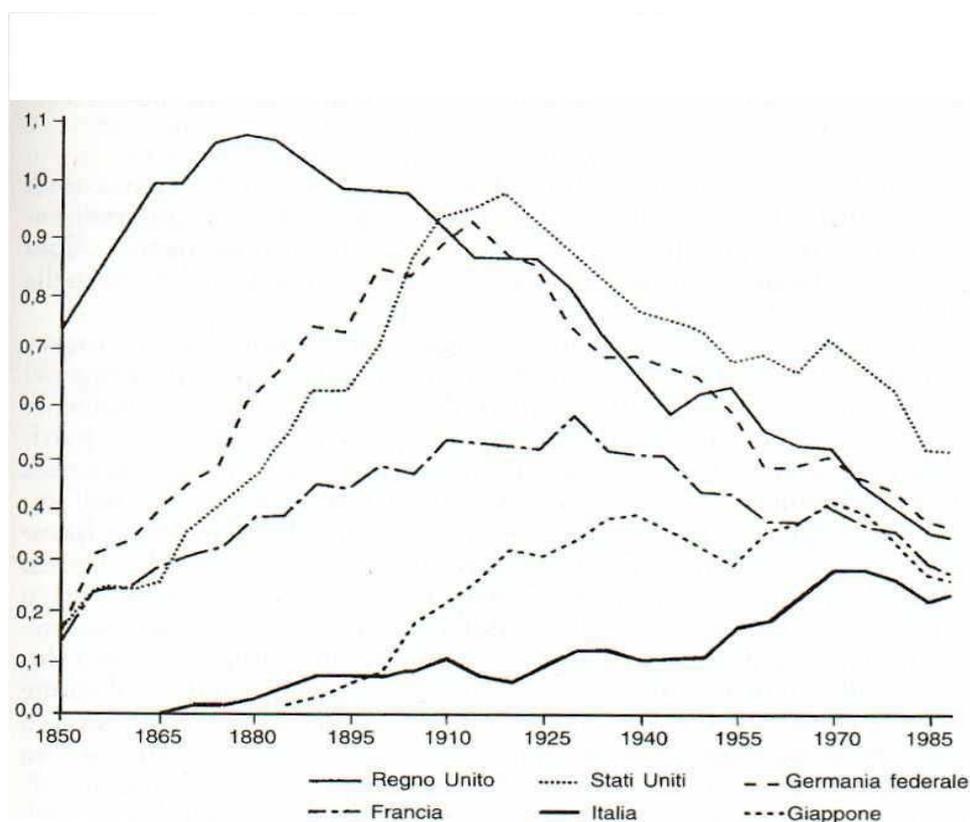
Without getting deeper into the debate, we can stick to a few stylized general considerations, suggested by the following graphs and figures, which give at least a partial answer to our question.

G.1 Energy intensities of GDP, selected countries, 1850-1990 (tep/1980 dollars ×1000)

⁴ Bardini, 1991 and 1998

⁵ Colombo, 1991

⁶ Cafagna 1989,1999; Colli 1999, 2002; Toninelli 1999; Bolchini 2003; Berta 2003.



Source: Martin, 1990

The first graph portrays the behavior of the curves of the energy intensity (EI) in the six Western most industrialized countries: the one of Italy emphasizes once more the diversity of its pattern of industrialization. In fact, Italy's EI curve keeps the typical bell-shape – i.e. a moderate process of convergence towards the patterns of the other five countries – but also shows:

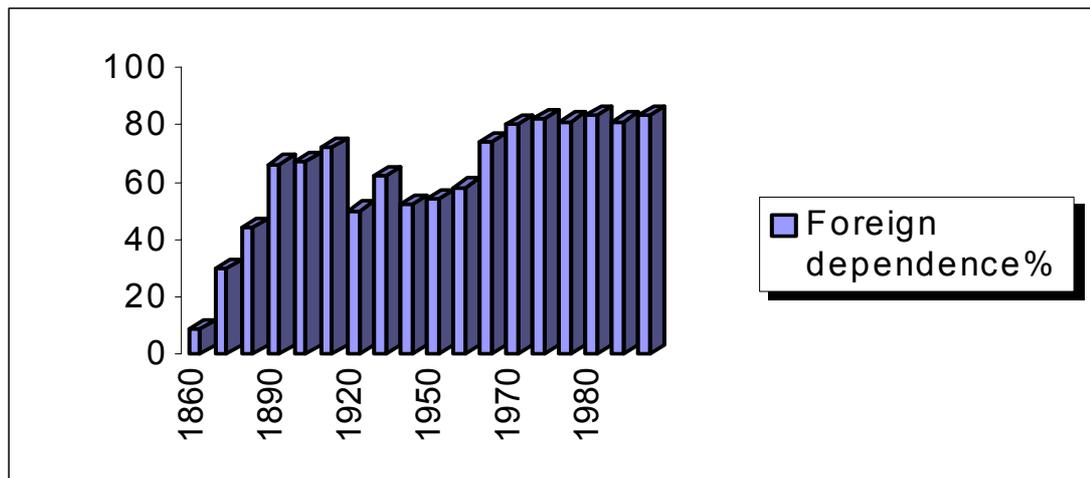
- i. the lowest values all over the period, i.e. the process of economic growth with the lowest consumption of energy;
- ii. no evident breaks, but continuity of growth at slow pace;
- iii. a moderate but clear increase in the Fifties, that is at the time of the economic miracle of the country;
- iv. a very much delayed phase of industrial maturity which partly explains why Italian peak had been so low: such a delay could have favored the adoption of the recent and more efficient technologies⁷.

Further considerations are suggested by the observation of the two following figures. The first one is concerned with the level of the country's energy dependence from abroad over the past one hundred fifty years⁸.

⁷ A recent and thorough discussion of the behaviour of the energy intensity in the different industrial sectors in post -WW2 Italy is offered by Cardinale and Verdelli, 2008

⁸ See table 1 in the Appendix

Fig.1: Italy's energy dependence from abroad



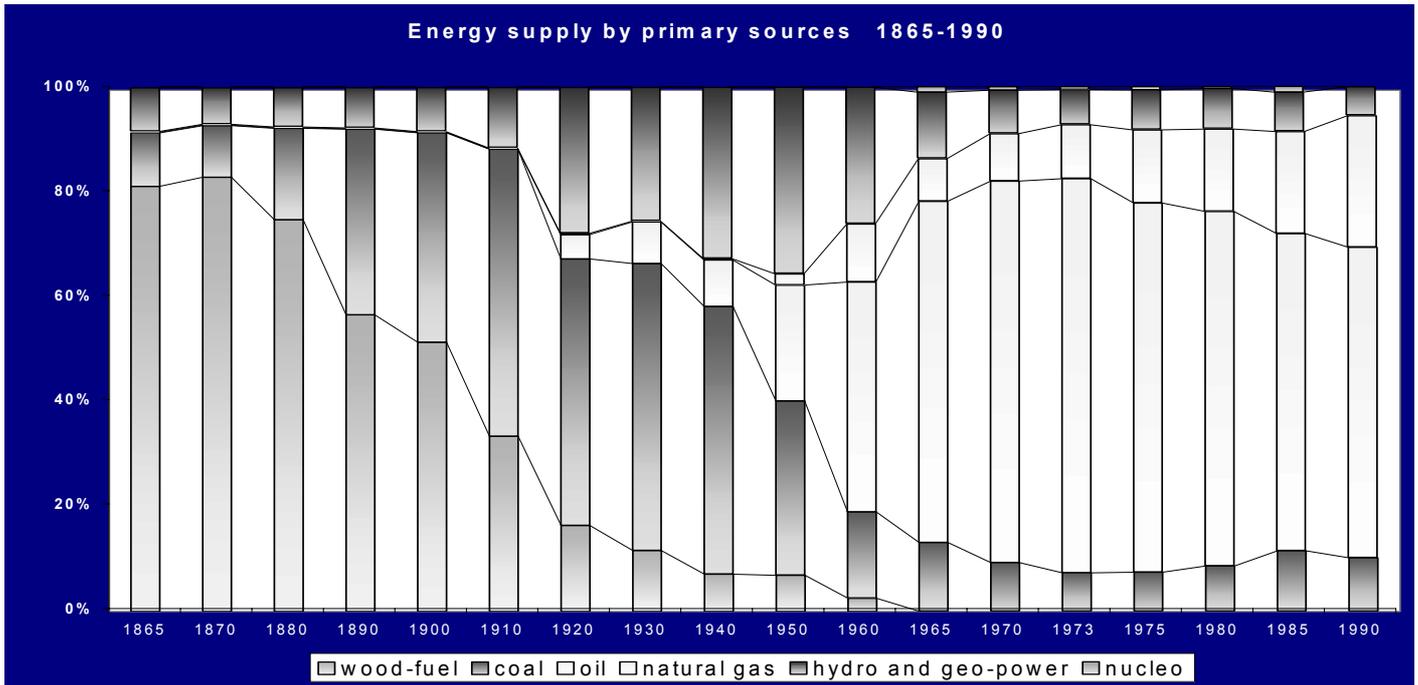
Source: see Appendix, table 2

In spite of its low EI growth, since the industrial wave of 1880s Italy heavily depended from abroad for her energy supply. Only between 1920s and 1950s this dependence was reduced to a little more than 50% (1930) of the total, thanks to the contribution of water to the production of electricity. These four decades comprise:

- the *fascist period* (1923-1943), when in a general climate of nationalistic spirit the myth of the energetic independence of the country was easily used by the regime for political propaganda.
- the *Mattei's age* (1946-1963) when a more plausible agenda – energetic autonomy rather than independence – was pursued with fairly good results.

If we turn to the following figure (fig.2) we can see that only in the latter period the hydrocarbons-dominated phase of Italian energetic history de-facto began. In fact, their consumption grew from 24% of total energy consumption in 1950 to 55% in 1960, to 81.5% in 1970 and reached the peak of 85.5 of 1973, then stabilized around 80%. Besides, the contribution of crude alone to total energy consumption grew from 22% in 1950 to the peak of 75.3% in 1973, then decreased to 56.6% in 1990, while natural gas increased from 10.2% ('73) to 24% ('90) (see Appendix, table 2).

From table 3 in the Appendix it can be grasp that in the past the contribution of water to the production of electricity had been actually very important. It peaked to 97% in 1930, kept over 80% up to the early 1960s, then rapidly decreased, to drop to 16% in 1990, when 63% came from hydro-carbons (coal 17%). The choice to move from water to oil was determined by: a) the almost next exhaustion of the water potentialities within the country and b) the collapse of the cost per unit of thermo-produced energy, due to a vintage of new thermo-plants of great scale and higher efficiency as well as the drop of the real price of crude.



3 – State-owned enterprise in Italy: a few general remarks

Before entering the specific issue of the role played by national oil companies in Italy's economic growth, a few general remarks concerning the pace and pattern of direct state intervention in the economy are needed⁹:

- i) direct state-intervention in the economy began soon after the unification of the country and was directed primarily to the construction and management of infrastructures such as canals and railroads;
- ii) it increased after WW1 with the setting of financial institutions (the so called Istituti Beneduce) to strengthen the financial market, and later of AGIP (1926);
- iii) in the 1930s a new wave of nationalization occurred, aimed to rescue private industrial concerns struck by the economic depression. Two state agencies, IMI and IRI, were on purpose created
- iv) in the post world war II period, Italy, unlike the other defeated powers, not only resisted pressure to progressively divest public properties and encourage a free market ideology, but also gradually enlarged its control over the economy and production through what in short was to become an organized shareholding system. The system reached its peak in the 1980s: ENI and IRI were its pillars;
- v) only in the mid-1990s, a quite delayed, still ongoing, privatization process began, which greatly reduced the State presence in the Italian economy.

⁹ For a general treatment of the entire parabola of Italian public enterprise, see Toninelli 2003, ch.4, and 2004

The main social/economic objectives of the construction of the Italian public sector were partly in line with the ones displayed by other nationalization processes¹⁰. They were aimed, first, to surrogate the inadequate action of private capitalism, too feeble on the financial front and facing a very poor market and, second, to develop strategic sectors of the economy by initiating public activities (oil, highways, telecommunications). But in the Italian case further objectives were as important:

to rescue private business affected by deep, sometimes irreversible economic crisis (such as the shipbuilding sector or various textile, mining and engineering companies) as well as to foster modernization and growth (specially employment) in neglected regions of the country (most of all in the South and the Islands).

On the whole, political and ideological motives were apparently less important in the Italian case, although a) the component of international prestige and political support to the regime was not negligible in the establishment of AGIP, b) in the tardy nationalization of electrical sector (ENEL, 1963), political and ideological reasons seemed to prevail.

Up to the creation of ENI (1953), the strategy of AGIP was focused particularly on : energetic independence (with Mussolini) and energetic autonomy (with Mattei). Only in the Fifties the issue of the relationship between State companies and economic growth was clearly posed. IRI and, even more, ENI became primary agents of Italy's economic policy and growth as the statutes of both the holdings contemplated social as well as economic goals.

As a consequence both groups undertook initiatives to relieve unemployment (often by acquiring troubled enterprises across various industries) and stimulate growth (South Italy). Maximizing profit was at times second to other goals, giving rise to "improper financial burdens" in the balance sheet, which were to be offset by special State endowment funds. Later, however, this greatly contributed to the explosion of the public debt as well as to the degeneration of the system, all the more so since electoral and political goals began to replace the social-economic ones. The trend became more evident when a Center-Left government coalition introduced new political parties and lobbies (i.e. new interests) into the administration of state-companies¹¹.

4. The origins and the early development of an Italian national oil company

4.1 - In the early Twenties the Italian oil market was controlled by the duopoly SIAP (owned by Standard Oil) and NAFTA (Shell). Both companies pursued primarily the downstream activities, although SIAP, thanks to the acquisition of a small, old exploring company (Spi), soon became the main producer of Italian crude¹².

¹⁰ Toninelli 2000 and 2004.

¹¹ Cuzzi, 1975; Pressenda, Sarale, 1978; Orsenigo, Sapelli, Toninelli 1992; Balconi, Orsenigo, Toninelli 1995; Barca, Trento 1997; Amatori, Colli 1999.

¹² Pozzi 2001

In 1926, after the unsuccessful joint venture with an American oil company (Sinclair), the fascist government decided to set up a brand-new state oil company, AGIP (Azienda Generale Italiana Petroli), with the tasks of exploring and supplying hydrocarbons as well as distributing oil products in Italy¹³. This major decision was somehow paradigmatic of the ambiguous and fluctuating economic policy of the regime: pursuing the national economic interest without hurting the private industrial establishment, from which the regime was receiving strong political support. Therefore in the board industrial and financial tycoons seated together with fascist (often retired) bureaucrats¹⁴.

The setting up of AGIP was to be explained primarily by the economic-political climate of the period, imbued with strong nationalism. In a few backward countries rich in oil (such as Mexico and Persia) or in more developed countries without crude (Spain, France and precisely Italy), nationalism affected directly the oil sector, to face the growing power of the majors; therefore state intervention either in the upstream or in the downstream activities, or in both, became a feature common to all these experiences— although in different forms¹⁵. In Italy oil nationalism was just one aspect of the post-war energy nationalism which attracted large sections of the scientific and technical world, the ones looking for alternatives to the energy dependence from abroad: such an attitude was sharpened by the autarky goals of the late Thirties¹⁶. In this climate AGIP was envisaged as a way to break the existing duopoly, as well as one of the main tools to reach the energy self-sufficiency. However it has been stressed also the strategic-diplomatic aspect of the decision, that is the possible use of AGIP as a mean to penetrate the Balkans: as a matter of fact soon exploration was started in Romania through an associated local company, Prahova.¹⁷

4.2 – Early development of AGIP was hindered by the will of the board not to collide with the majors, as shown, first, by the 1932 removal of president Alfredo Giarratana, who during his three years office had impressed quite a dynamic spur to the company both at home and abroad, and, second, by the 1936 sale to the Irak Petroleum Co. of the AGIP's 40% share of the Mossul Oil Field Co., which controlled very rich oil concessions in Iraq¹⁸.

However, the Thirties marked also a period of accumulation of intangible assets particularly in the upstream. A group of brilliant technicians grew up in AGIP, partly as a consequence of the strict collaboration with American geo-

¹³ Magini 1976; Cianci 1977; Pizzigallo 1981; Pizzigallo 1984. For many aspects such a move can be considered the actual birth of the state-entrepreneur in Italy

¹⁴ A common joke of the time was to read the acronym of AGIP as “Associazione gerarchi in pensione” (Association for retired fascist bureaucrats).

¹⁵ Clark 1990, Sapelli *et al.* 1993

¹⁶ Petri 1987; Pizzigallo 1993; Toninelli 1999; Maiocchi 2003

¹⁷ Pizzigallo 1984

¹⁸ Magini 1976, pp. 52-3; Pizzigallo 1984, ch. 6-7

physicists: they would have formed the structure of technicians, which Mattei could later rely on¹⁹.

Negligible results in the upstream activities at home – exploration in the Po Valley turned out disappointing - were partly compensated by success in the downstream ones. In 1940 the refining capacity of the company amounted to 500.000 tons, that is it came to control about 30% of Italian capacity . It was the consequence of the incorporation of ROMSA (1927), soon equipped with modern cracking technologies, of the refining and cracking plants of Porto Marghera (DICSA, 1935) – previously owned by Giovanni Volpi, an outstanding industrialist and politician of the regime - and, finally, of the 1936 setting up of Anic (jointly with Montedison). Good results were obtained also in the distribution, thanks to an aggressive commercial policy (but also to the state aid): the internal market share of AGIP increased from 20% (in 1928) to 33% in the mid-Thirties²⁰.

4.3 - During the early '40s exploration with innovative techniques revealed some oil and gas fields in the Po Valley: the envisaged potentialities of methane fields – especially during the autarky and war periods – led the State to the creation of ENM (Ente Nazionale Metano), to supervise the natural gas activities. This in turn, together with AGIP, created SNAM (Società Nazionale Metanodotti), a company dedicated to the construction and management of pipelines. With regard to downstream, since at the beginning of the war the branches of foreign companies had been confiscated and given to the national company, AGIP became in practice the sole supplier of the Italian market²¹.

After 1943 Italy's surrender, the company necessarily split, following the political division of Italy: Rome headquarters, managing mostly downstream activities, were put under the control of CIP (Comitato Italiano Petroli), created by the Allies. On the contrary the “old” AGIP kept on acting under the renewed fascist regime of Northern Italy (Salò): its new headquarters were set in Milan, where at the time former upstream activities and technical capabilities concentrated. This split would have marked the following history of the company: a creeping cultural and power conflict between “merchant” Rome, supporting downstream, and “pioneer” Milan devoted to exploration²².

4.4 -The war left AGIP in bad conditions: its refining plants and bunkers were damaged or destroyed, the distribution network partly out of service, oil-wells dismantled²³. The problem of the internal organization were even heavier: with the reunification of the company, problems of day-to-day management, communication, accountancy emerged. But, most important, the destiny of AGIP was not clear. It was the object of a sharp conflict, both internal and external to

¹⁹ Pozzi 2005

²⁰ Sapelli *et al.*, 1993, p. 46-7

²¹ Magini 1976, pp.75-7

²² Balconi, Orsenigo, Toninelli 1995, p. 327.

²³ Kovacs 1964, p. 136; Magini 1976, p. 62-3.

the company: on the one side, the ones, backed by the Allies and the Confindustria, who wanted either to have it liquidated, or privatized or 'halved', so not to menace the majors' power; on the other, those who wanted to strengthen AGIP to make it the main character of the energy autonomy of the country²⁴.

5. *The Mattei age: the 'heroic' years, 1945-62*

5.1 – On April 1945 Enrico Mattei, a chemical manufacturer and former commander-in-chief of the Catholic partisan brigades, was appointed by CLN (the National Liberation Committee) 'extraordinary commissioner of AGIP': his special task was to manage the activities located in the North, which had remained under the fascist control until the end of the war.

Mattei had a strong personality and a strong nationalistic spirit: he has been called the "condottiere"²⁵, to mean that he was a sort of a legend for his supporters, his staff and employees, by him always highly motivated to pursue the mission of the company. However it is also well known that his figure was much criticized, sometimes very harshly, by his opponents, who considered him a corrupter and someone who pursued his ends by unscrupulous means as well as the first responsible of the bribery system which soon would have afflicted Italian politics²⁶.

Having soon realized the growth potentialities of AGIP, Mattei became the first advocator of its development and fought a sharp political and lobbying battle to maintain autonomy, to carry on with exploration, and, eventually, to grow. He could rely on the support of its staff and the DC party - he was elected deputy in 1948 - and on its own ability to communicate and deal. As a matter of fact it is true that to realize his project Mattei didn't mind to act at times in cynical or opportunistic ways, such as in the case of the 1949 bluff of oil discovery in the Po Valley to attract the public opinion²⁷. Although poor in crude, the Valley turned out very rich in methane. Soon AGIP began to supply gas to industries of the North-West through plants and pipelines built and managed by SNAM, by now fully controlled by AGIP.

5.2 - In 1953, in order to rationalize the impetuous growth of the public sector of energy, all the state companies operating in the oil field were put under the authority of a new state holding: ENI (Ente Nazionale Idrocarburi). The project had been warmly sponsored by Mattei, who became the first president of the company. ENI's purpose was twofold. At a general level ENI was thought of as an agency for the economic development of the country, therefore it was assigned functions, responsibilities and aims that went beyond the sheer

²⁴ Sapelli *et al* 1993, pp 49-51

²⁵ Yergin 1991

²⁶ Shonfield 1965, 1974; Frenkel 1966; Cuzzi 1975; Colitti 1979; ENI 1982; Bazzoli, Renzi 1984; Sapelli *et al.* 1993; Perrone 2001. The press campaigns against Mattei have been collected in ENI 1956-63.

²⁷ Bazzoli, Renzi 1984, p.112 ff.; Perrone 2001, pp. 33-37, Pozzi 2003, pp. 67 and ff.

economic activity . In other words, ENI's staying and competing on the market had to coexist with concern for employment, welfare, and socio-economic development, particularly in the southern regions of the country. In this respect the Eni project quite differed from the IRI's one, previously created (1933) with the aim of rescuing collapsing private enterprises; "social" objectives entered the long-term strategy of IRI only in the Fifties, following an intense political and ideological debate on the role and functions of state-owned companies in the Italian economy²⁸.

Therefore the creation of ENI can be considered as an act of strength *against* private interests and, as such, it has been contrasted to that of IRI, an act of rescue, *in favor* of private²⁹: and this two original imprints – force and weakness - would have marked the story of the two holdings³⁰. ENI primary tasks were to furnish low-price energy to the economic system and, as far as the chemical sector was concerned, fertilizers and other chemical products to agriculture. Once again, then, as in the Fascist period, but much more efficaciously, the strategic focus was on the energy independence of the country.

Actually the institutive law gave ENI larger freedom of action than it was conceded to IRI and transformed it into a major subject of political economy: hence for years Mattei (and ENI) would have been the real responsible of the energy policy of the country. Besides, by statute ENI was given the monopoly of the exploration and production of the Po Valley, a goal pursued by Mattei since '46. For almost a decade this yielded a continuous cash-flow – the so called methane rent – which financed the growth of the group³¹.

5.3 – ENI as a group grew highly integrated, on the model of the majors, but decision-making was strictly in the hands of Mattei, or at most, of a few trusty collaborators. The internal structure of the group had ENI standing on the top; it controlled four parent companies, AGIP Mineraria (upstream), AGIP (distribution), SNAM (natural gas and pipelines), ANIC (refining); these in turn controlled a number of companies operating in a range of activities: chemistry, engineering, textiles etc.

Growth in the core business followed a twofold strategy:

i) growth on internal market was pursued through an aggressive price strategy against the majors. Between 1953 and 1962 the contribution of ENI to Italy's consumption of hydrocarbons grew from 8,5% to more than 20%; the internal yearly production of oil grew from 86 to 513 thousands of tons, the one of natural gas from 1.2 to 6.9 billions of cubic meters; in the same decade 738 wells were drilled (equivalent to 2.38 millions meters). In 1962, ENI controlled only 12% of total refining capacity of the country, which had become the refinery of Europe because of her favorable localization in the middle of the Mediterranean

²⁸ Saraceno 1975; Bottiglieri 1984; Maraffi 1990.

²⁹ Amato 1976, pp.135-7

³⁰ Barca, Trento 1997, p.209

³¹ Magini 1976, ch.4; Sapelli, Carnevali 1992, pp.40-1.

Sea. But ENI covered 25% of the gasoline market, as a consequence of its price, which was the lowest in Europe and of its aggressive marketing strategy³²;

ii) the resumption on a larger scale and with better success of the international strategy already experimented by Giarratana in the 1930s, mainly in the upstream, as soon as exhaustion of internal sources was envisaged. The first move was towards a few LDC (Iran, Egypt, Lybia, Nigeria, Algeria, Argentina, etc.): innovative, 75% to 25% contracts of joint-venture with the hosting states, instead of the standard fifty-fifty, were offered (the “ENI formula”). From 1959 to 1962, 12.8 million of tons of crude were produced from these sources. The second move was to be even more disruptive of the equilibrium not only of the oil-system, but also of the international policy of containment: the contracts that since 1958 were signed with URSS. ENI exchanged cheap soviet crude with products of the group. In 1961, 22% of oil imported by Italy came from Russia.³³ Hence ENI’s “flair for negotiating complex barter deals to gain access to crude”³⁴, mixed with opportunism – just before his death Mattei was negotiating an import contract with the most powerful of its enemies, Standard Oil - soon gained to the company the reputation of *enfant terrible* of the international oil market.

A further strategic line pursued was growth through diversification. Increasing diversification into related activities stemmed partly from a conscious strategy of growth, partly from ENI’s commitment to foster economic development: quite successful initiatives were the entry into Pignone, soon a world leader in oil-plants engineering, in the glass sector (SIV), and, at the beginning, in basic chemistry (Ravenna)³⁵. However, the obligation to implement public policy goals became even clearer after the institution of the State Shareholding Ministry, when a law codified that at least 40% of new investment by public holdings should have been addressed toward backward regions. This would have had soon perverse effects, such as 1962 ENI’s involvement in textiles and the so-called ‘chemical war’³⁶.

5.4 – There is no doubt that ENI was one of the main agents if the Italian economic miracle which characterized the passing of the country to a mass consumption society. For instance, the construction of a network of highways, particularly the Autostrada del Sole, accomplished in a length of time unimaginable by today’s standards in Italy, had ENI, together with Fiat and IRI, among its main sponsors, whilst AGIP’s action was fundamental to the supply of cheap gasoline to the small cars that were beginning to fill streets and roads³⁷.

³² Magini 1976, pp.141-5; Kovacs 1966, pp. 191-218; Frankel 1966, p.99

³³ Frankel 1966, pp.138-43; Magini 1976, pp. 145 ff.

³⁴ Grant 1993, p.291

³⁵ Roverato 1991; Sapelli, Carnevale 1992, pp.42-8; Grant 1991, pp.246-9.

³⁶ Such a war for the control of the market of basic chemicals was fought against the main private competitor, Montedison, and absorbed huge financial resources for years. See note 48 below.

³⁷ Menduni 1999; Amatori, Colli 1999, ch.17; Crainz 1996, pp.111-2

Besides its direct impact on growth and employment, ENI had also a strong cultural -social influence on the modernization of Italy as it imported and adapted several elements of the “American model”: they ranged from the look of its new headquarters in Milan and Rome (skyscrapers, open space) and the revolutionary service stations in place of the old oil-pumps, to the restructuring of the internal organization (supported by US business consultants) and to the introduction of consensus strategies. To gain the support of the public and enlarge the one from politicians, ENI widely used lobbying and aggressive public relations strategies (films and documentaries, elegant annual reports, innovative marketing) all the way to create a new, very dynamic newspaper. But ENI had quite an impact also at the social level: the introduction of new forms of industrial relations, the construction of the residential model-district of Metanopoli, the setting up of a center for the formation of technicians and managers of the oil sector (with students coming from the countries to which ENI was linked by business ties), the early sponsoring of sport teams, etc.³⁸

6. ENI from Mattei to the oil crises

6.1 - The air-crash killed Mattei in a critical moment, when larger and larger sections of the political area tried to restrain his action, as for instance in the case of the creation of an autonomous SOE for electricity (ENEL), which deluded his aspiration for having ENI as the sole depositary of the energy policy of Italy .

Mattei's death left the group unsheltered from politics. Moreover, ENI's financial position worsened: traditional short-term loans and self-finance didn't pay for the ambitious plans of overseas expansion and off-shore exploration, nor for the increasing use of ENI as a vehicle of industrial policy. Greater diversification and further rescues (textile, machinery, mining), geographical expansion of chemicals (in Sardinia, Sicily, Apulia), the entry in nuclear energy and coal mining, all this made for huge costs which ENI alone could not afford anymore. Now direct State aid was necessary, it never happened with Mattei; therefore since 1964 the endowment fund began to be inflated: it was 37 billions liras in 1953, it grew to 162 in 1964, to 347 in 1968, to 989 in 1973; later it more or less doubled every five years: 1.871 billions in 1978, 5.234 in 1983, 8.901 in 1988. This corresponds to an increase in current prices of 241 times in thirty years (approximately 38 times in constant prices): it is not difficult to realize how these financial necessities could have conditioned the strategic choices of ENI's top management.

6.2 - It is usually said that Mattei's death marked a big change in ENI's strategy: from producer to merchant. As a matter of fact between 1962 and 1971 ENI's purchase of crude strongly increased, as a consequence of new contracts with Standard, Gulf and URSS: purchases (50.000.000 tons) almost equally direct production abroad. In 1965 a contract with Esso for importing 3 billions of

³⁸ Magini 1976, pp.142 ff.; Perrone 2001, pp. 59-69; Sapelli *et al.* 1993, pp.199-242

cubic meters of Libyan natural gas was signed. Besides, the great expansion of the pipelines network, connecting Italy to Central Europe, then to URSS and Algeria, the construction of refineries in the oil producing countries and the merger of AGIP Mineraria, now only a branch, into AGIP (1963) seem to give support to such an hypothesis³⁹.

Things however were a little different: the buy-option had become a necessity, at least a temporarily one, as inland oil and gas fields were close to exhaustion, while production from new overseas concessions, although numerous, was lower than expected. A more successful exploration would have required greater investment abroad and in off-shore activities, the one that ENI of president Cefis, already financially over-stretched and engaged in the war for the control of the basic chemicals couldn't afford. At the time this war displaced the one for energetic autonomy.

7. ENI through the oil crises.

7.1 - Unfortunately all this happened on the eve of the first oil-shock, which everywhere opened the way to a new run for oil.

ENI entered the crisis as Italy's 4th largest group and world's 12th oil company; but the most *diversified*: energy counted for only 65% of its revenue (while chemicals counted for 15%, engineering for 8%, textiles for 7%). Therefore ENI's activities in the core business just reached 80% of total activities, while in six of the seven majors such a share was between 93 and 97%⁴⁰. ENI's strong points were plants engineering, thousand of km of pipelines, ability in striking deals, a young motivated technical staff and a corporate culture still permeated of Mattei's pioneer spirit, particularly in the operative companies.

The reaction to the oil crisis was rapid indeed; supplying energy to the country became again the primary mission of ENI⁴¹. Hence non-energy investment decreased from the 1974-8 yearly average of 32% of total, to 18% (1979-83) and 12% (1984-6)⁴² while upstream investment grew to 1/3 of ENI's total investment in the late '70s, and to more than 50% in 1985. ENI's strategy differed from the majors' one: it invested in upstream also when oil prices fell, and mainly in Africa instead of America. Besides ENI developed early off-shore exploration (51% of total exploration by 1976)⁴³. The growing supply of natural gas came mostly from purchases, (15.bill. m^c in 1980, 26 in 1990): only in the late 1980s the yearly production grew from 12-14 to 17-18 billion m^c ⁴⁴. But purchasing gas from abroad meant also developing the pipelines system through the ENI's companies:

³⁹ Magini 1976, pp. 180 ff.; Sapelli, Carnevale 1992, pp.49-69

⁴⁰ Grant 1991, pp. 241, 246.

⁴¹ Sapelli *et al.* 1993, p.83

⁴² Grant 1991, tab.12 (p.46), Grant 1993, tab. 2.3 (p .216)

⁴³ Grant 1991, p. 244; Magini 1976, pp. 210 ff.; Sapelli, Carnevale 1992, pp. 73-4

⁴⁴ Grant 1991, tab.1 (p.252) ; Grant 1993, tab. 2.8 (p.221)

in Italy it grew from 7.600 (1970) to 22.000 km (1990); large joint-ventures were set up for construction and management abroad (TAG, Algeria)⁴⁵.

7.2 - Also the downstream activities of ENI were affected by the oil shocks (and the Suez crisis), following the general repositioning of the sector: disintegration, flexibility in supply, divisionalization⁴⁶. The exit of Shell, BP, Amoco, Texaco from Italian market forced ENI to fill the gap; but also gave the group an opportunity to grow in the downstream activities: refining and distribution. ENI took over the downstream activities of Shell Italia (1974) and Mach (former BP, 1981) and came to control about 35% of refining capacity, 40% of oil products market (50% gasoline). This required deep continuous restructuring: in 1974 a new company, IP, took over Shell activities; in 1978 AGIP Petroli was separated from AGIP, to manage downstream activities; in 1981 AGIP Petroli became the parent company of the downstream sector⁴⁷.

Because of the collapse of the OPEC pricing discipline, the '80s were a decade of crisis and change, but, for ENI, also of growth. ENI, which entered the decade as the 8th biggest oil company, in 1990 was the 5th for sales, the 3rd for assets and employment⁴⁸.

However in the early '80s financial performance was quite unsatisfactory, primarily in the non-energy activities. Therefore a policy of cost-reduction and divesting non-core activities (textiles, 1986) was started: since the mid-'80s rationalization deeply affected the refining plants and the gas-stations network. Employment which had grown from 76.000 (1971) to the 1983 peak of 144.000, was reduced to 106.000 in 1989⁴⁹.

Only the chemical question was not solved⁵⁰: ENI in the early '90s would have been involved in a new battle which practically ended up in the liquidation of the basic chemical in Italy .

⁴⁵ Sapelli, Carnevale, 1992, pp. 77-80, Grant 1993, p. 222

⁴⁶ Mabro, Bacon, 1990; Grant 1991, pp.17-68; Grant 1993; pp. 25-81, Sapelli *et al.* 1993, pp. 81-7, 94-7

⁴⁷ Sapelli *et al.* 1993, chs. 3 and 4.

⁴⁸ Grant 1993, tab. 2.1 (p.39)

⁴⁹ Sapelli *et al.* 1993, ch. 5; Sapelli, Carnevale 1992, pp. 86-98; Barca, Trento 1996, tab. 1(pp. 198-9)

⁵⁰ The story of the struggle for the control of the chemical industry between ENI, which earlier had already diversified into basic chemicals, and Montecatini-Edison, the main private concern which controlled one fifth of the European market of plastics, is rather complicate and cannot easily summarized here. It exploded in 1968 when, in the attempt at rationalizing the entire sector , the president of ENI, Cefis, supported by Mediobanca, a powerful merchant bank, tried to gain control over the private company, which was in a very bad financial condition. However the ambiguous actual outcome of the move – a mixed private-public syndicate of control – , the resistance of other private chemical companies, plus contrasting political interests hampered the restructuring. In the early '80s the company, now Montedison, was remitted into private hands to become for a while a public company, until (1986) it came under the control of an unscrupulous raider, Roul Gardini, the president of Ferruzzi, a major holding in the food industry. The raid cost an enormous financial effort which forced Gardini to search for a new agreement with ENI: the result was Enimont, a new company to which the basic chemical activities of both groups were conferred. After Gardini's failed attempt to gain the majority of the new company, Ferruzzi's share in Enimont, greatly overvalued to hide the enormous quota paid to the ruling political parties, was sold to ENI. The financial/political scandal that followed, tragically marked by the suicide of the two main characters of the story, ended up in the *de facto*

8. *Concluding remarks.*

Deep changes in the oil market in the 1970s and 1980s could not but greatly affect ENI's policy. By the mid-80s it was clear that the mission and the goals assigned to SOES in the mid-fifties could not be fulfilled anymore, at least along the lines previously followed. ENI had to confront with competitiveness and growth according to the market rule: strategies finalized to profitability and efficiency became more and more important *vis a vis* the economic and social objectives. By the early 1980s the state-company had in facts definitively entered the elite of oil world market: estimated reserves of oil and gas liquids amounted in 1990 to 2.881 millions barrels (3.782 in 2001) with an increase since 1985 of 34%: this value was bigger than the ones of Texaco, Amoco, Elf and could bear comparison with Chevron, Mobil, BP⁵¹.

Differently from the previous years, since the mid-90s ENI is making huge profits: this has opened the way to a smooth process of de-nationalization. As a matter of fact the large number of shareholders who subscribed the three public auctions which privatized the 70% of the former public holding, have been already nicely rewarded.

These quite satisfactory results seem to be the rip of a fifty years accumulation of capabilities and technicalities strictly connected with its previous missions. However a balanced evaluation of the contribution of the holding to the growth of the country is hard to trace: we should need very sophisticated cost-benefit analysis. But the intuitive answer to a simple counterfactual question – whether Italy would have been better or worse without ENI – is likely to lean towards the positive side.

liquidation of the chemical industry of Italy. The valuable fine chemical activities of Ferruzzi were sold to Shell, while in the mid Nineties ENI started to sell its inflated basic chemical activities mostly to foreign buyers. See, e.g., Scalfari-Turani 1974; Marchi-Marchionatti 1992; Barca-Trento 1996; Amatori-Colli 1999.

⁵¹ Grant 1993, various tables

REFERENCES

- G. Amato, 1972, *Il governo dell'industria*, Bologna, Il Mulino
- F. Amatori - A. Colli, 1999, *Impresa e industria in Italia dall'Unità a oggi*, Venezia, Marsilio
- R. Bacon *et al.*, 1990, *Demand, Prices and the Refining Industry: A Case Study of the European Oil Products Market*, Oxford, OUP
- M. Balconi - L. Orsenigo - P.A. Toninelli, 1995, *Tra gerarchie politiche e mercati: il caso delle imprese pubbliche in Italia (acciaio e petrolio)* in M. Magatti (ed.) *Potere, mercati, gerarchie*, Bologna: Il Mulino
- F. Barca, S. Trento, 1996, *La parabola delle partecipazioni statali: una missione tradita*, in F. Barca (ed.), *Storia del capitalismo italiano*, Roma, Donzelli
- C. Bardini, 1991, "L'economia energetica italiana (1863-1913): una prospettiva inconsueta per lo studio del processo di industrializzazione", *Rivista di storia economica*, VIII
- C. Bardini, 1998, *Senza carbone nell'età del vapore*, Milano, Bruno Mondadori
- L. Bazzoli - R. Renzi, 1984, *Il miracolo Mattei*, Milano, Rizzoli
- G. Berta, 2003, *La qualità dell'impresa*, in Ciocca e Toniolo, 2003 pp. 459-93.
- P. Bolchini, 2003, *Piccole e grandi industrie, liberismo e protezionismo*, in Ciocca e Toniolo, 2003, pp. 347-426
- B. Bottiglieri, 1984, "Linee interpretative del dibattito sulle partecipazioni statali nel secondo dopoguerra", *Economia Pubblica*, n.4-5, pp. 239-44
- L. Cafagna, 1989, *Dualismo e sviluppo nella storia d'Italia*, Venezia, Marsilio
- L. Cafagna, 1999, *Contro tre pregiudizi sulla storia dello sviluppo economico italiano*, in *Storia economica d'Italia. 1. Interpretazioni*, in *Storia economica d'Italia. 1. Interpretazioni*, a cura di P. Ciocca e G. Toniolo, Roma-Bari, Laterza, pp. 297-325
- A. Cardinale - A. Verdelli, *Energia per l'industria in Italia. La variabile energetica dal miracolo economico alla globalizzazione*, Milano, Angeli, 2008
- F. Cavazza - S.R. Graubard, 1974, *Il caso italiano*, Milano, Garzanti
- E. Cianci, 1977, *La nascita dello stato imprenditore in Italia*, Milano, Mursia
- P. Ciocca e G. Toniolo, 2003 (a cura di), *Storia economica d'Italia. 3. Industrie, mercati, istituzioni. 1. Le strutture dell'economia*, Roma-Bari, Laterza,
- J.G. Clark, 1990, *The political economy of world energy*, New York, Harvester Wheatsheaf
- A. Clò, 1994, *Crisi energetica: consumi, risparmi e penetrazione elettrica*, in *Storia dell'industria elettrica italiana. 5. Gli sviluppi dell'ENEL, 1963-1990* (a cura di D. Zanetti), Roma-Bari, Laterza
- M. Colitti, 1979, *Energia e sviluppo in Italia. La vicenda di Enrico Mattei*, Bari, De Donato
- A. Colli, 1999, *Piccole imprese e piccole «industrie» in Italia sino al 1945*, In *Storia d'Italia. Annali 15. L'industria* Torino, Einaudi,
- A. Colli, 2002, *I volti di Proteo*, Torino, Bollati Boringhieri
- G. Crainz, 1996, *Storia del miracolo italiano*, Roma, Donzelli
- D. Cuzzi, 1975, *Breve storia dell'ENI. Da Cefis a Girotti*, Bari, De Donato
- ENI, 1956-63, *Stampa e oro nero*, Milano-Roma, Il Mercurio
- ENI, 1982, *Mattei quell'idea di libertà*, Roma, ENI
- P. Frenkel, 1966, *Mattei: oil and power politics*, London, Faber & Faber
- R.M. Grant, 1991, *The oil companies in transition 1970-1987*, Milano, F. Angeli
- R.M. Grant, 1993, *Restructuring and strategic change in the oil industry*, Milano, F. Angeli
- G.E. Kovacs, 1994, *Storia delle raffinerie di petrolio in Italia*, Roma, Colombo
- N. Leff, 1979, *Entrepreneurship and economic development. The problem revisited*, in "Journal of Economic Literature", XVII, 1, pp. 46-64
- R. Mabro - R. Bacon, 1990, *Petroleum products in Europe: Demand, Prices and the refining industry*, in

- R. Bacon et al. 1990
- M. Magini, 1975, *L'Italia e il petrolio. Fra storia e cronologia*, Milano, Mondadori
- M. Maraffi, 1990, *Politica ed economia in Italia*, Bologna, Il mulino
- J.M. Martin, 1990, *L'économie mondiale de l'énergie*, Paris, La Découverte
- L. Orsenigo - G. Sapelli - P.A. Toninelli, 1992, *The Evolution of the Strategy and Structure of a State Owned Company: The Case of AGIP Petroli S.p.A., 1960-1990*, "Business and Economic History", vol. 21, pp. 129-137
- R. Maiocchi, 2003, *Gli scienziati del duce*, Roma, Carrocci
- A. Marchi - R. Marchionatti, 1992, *Montedison 1966-1989*, Milano, F. Angeli
- E. Menduni, 1999, *L'Autostrada del Sole*, Bologna, il Mulino
- N. Perrone, 2001, *Enrico Mattei*, Bologna, il Mulino
- R. Petri, 1987, *Acqua contro carbone. Elettrochimica e indipendenza energetica italiana negli anni trenta*, in "Italia contemporanea", n.168
- M. Pizzigallo, 1984, *L'AGIP degli anni ruggenti*, Milano, Giuffrè
- M. Pizzigallo, 1993, *L'obiettivo dell'indipendenza energetica*, in Galasso, 1993
- G. Paoloni, 1992, (a cura di) *Energia, ambiente, innovazione: dal CNRN all'ENEA*, Bari: Laterza
- G. Paoloni, 1994, *Gli esordi del nucleare*, in Castronovo, 1994
- D. Pozzi, 2001, *Tra New York e Forno di Taro: l'occasione mancata della Società petrolifera italiana (1945-1953)*, in "Imprese storia", n. 24
- D. Pozzi, 2003, *Mattei e la "vecchia" Agip: ipotesi di continuità e rilancio strategico*, in "Imprese e storia", n. 27
- D. Pozzi, 2005, *Le capacità tecnico-manageriali nell'Agip di Enrico Mattei: un processo di accumulazione di lungo periodo*, in "Annali di storia dell'impresa", 15-16, Milano, Angeli
- A. Pressenda - M. Sarale, 1978, *Ricerca sulle partecipazioni statali. II. L'ENI da Mattei a Cefis*, Torino, Einaudi
- G. Roverato 1991, *Nuovo Pignone*, Bologna, il Mulino
- G. Sapelli - F. Carnevali, 1992, *Uno sviluppo tra politica e strategia. ENI (1953-1985)*, Milano, F. Angeli
- G. Sapelli - L. Orsenigo - P.A. Toninelli - C. Corduas, 1993, *Nascita e trasformazione d'impresa. Storia dell'AGIP Petroli*, Bologna, Il Mulino
- P. Saraceno, 1975, *Il sistema delle imprese a partecipazione statale nell'esperienza italiana*, Milano, Giuffrè
- E. Scalfari - G. Turani, 1975, *Razza padrona*, Milano, Feltrinelli
- A. Shonfield, 1965, *Il capitalismo moderno*, Milano, F. Angeli
- A. Shonfield, 1974, *L'impresa pubblica: modello internazionale o specialità locale?*, in Cavazza e Graubard
- P.A. Toninelli, 1999, *La questione energetica*, in *Storia d'Italia. Annali 15. L'industria*, Torino, Einaudi, pp. 351-84
- P.A. Toninelli, 2000, *The rise and fall of public enterprise: the framework*, in *The rise and fall of State-Owned Enterprise in the Western World*, (ed. by P.A. Toninelli), Cambridge, CUP
- P.A. Toninelli, 2001, *Il paradigma perduto: una riflessione sullo sviluppo economico italiano nel lungo periodo*, in *Atti di intelligenza e sviluppo economico. Saggi per il bicentenario della nascita di Carlo Cattaneo*, a cura di L. Cafagna e N. Crepax, Bologna, il Mulino, pp. 513-69.
- P.A. Toninelli, 2003, *Industria, impresa e stato. Tre saggi sullo sviluppo economico italiano*, Trieste, Edizioni dell'Università di Trieste
- P.A. Toninelli, 2004, *Between State and market. The parabola of Italian public enterprise in the 20th century*, in "Entreprise et histoire", n. 37, déc. 2004, pp. 53-74
- D. Yergin, 1991, *The prize: the epic quest for oil, money, and power*, New York, Simon & Schuster

APPENDIX

Tab.1: Some energetic and economic indicators of Italy, 1861-1990

selected years	POPULATION		INCOME		ENERGY CONSUMPTION		ENERGY INTENSITY		FOREIGN DEPEND.
	millions	index	bill.x 000 1985 liras	index	Mtep	index	Tep/mill. 1985 liras	index	%
1860	21,8	100	52,3	100	1,9	100	36,9	100	9
1870	25,8	125	57,0	110	2,5	130	42,9	120	30
1880	28,2	136	63,5	120	3,0	200	47,6	129	44
1890	30,5	146	65,8	130	5,0	330	76,3	207	66
1900	32,4	157	76,0	150	5,6	370	73,7	200	67
1910	34,5	169	91,8	180	9,9	660	108,1	293	72
1920	36,0	165	108,9	210	9,1	610	83,9	227	50
1930	41,1	189	129,0	250	18,0	1.200	139,0	377	62
1940	44,9	206	156,5	300	21,7	1.450	138,7	376	52
1950	46,9	215	173,3	330	21,5	1.430	124,3	337	54
1960	49,8	228	303,4	580	48,2	3.210	158,9	431	58
1965	51,5	236	387,4	740	80,1	5.340	206,7	560	74
1970	53,3	244	522,5	990	120,1	8.010	229,8	623	80
1973	54,7	251	585,5	1.120	139,8	9.320	238,9	648	82
1975	55,5	255	601,3	1.150	133,0	8.870	221,1	599	81
1980	56,0	257	756,2	1.450	147,0	9.800	194,4	527	83
1985	57,9	266	810,6	1.560	146,2	9.750	180,4	489	81
1990	58,0	266	941,4	1.800	163,5	10.900	173,7	471	83

Source: Clò, 1994, tab.8

Table 2: Energy in Italy by primary sources, 1865-1990 (%)

selected years	wood-fuel	coal	oil	natural gas	Total hydro-carbons	hydro and geo-power	nucleo	Total
1865	81,4	10,2			< 1	8,2	0,0	100
1870	82,8	9,8			< 1	6,8	0,0	100
1880	74,5	17,3			< 1	7,3	0,0	100
1890	56,5	35,3			< 1	7,5	0,0	100
1900	51,2	39,8			< 1	8,2	0,0	100
1910	33,3	54,5			< 1	11,3	0,0	100
1920	16,5	51,1	4,6	0,1	4,7	27,8	0,0	100
1930	11,6	54,7	7,9	0,0	7,9	25,3	0,0	100
1940	7,1	51,0	8,8	0,1	8,9	32,5	0,0	100
1950	6,9	33,3	22,1	2,0	24,1	35,5	0,0	100
1960	2,5	16,5	44,0	11,0	55,0	26,0	0,0	100
1965	0,0	13,1	65,3	8,0	73,3	12,5	1,0	100
1970	0,0	9,2	72,6	8,9	81,5	8,1	0,6	100
1973	0,0	7,3	75,3	10,2	85,5	6,5	0,5	100
1975	0,0	7,4	70,4	13,8	84,2	7,4	0,6	100
1980	0,0	8,5	67,2	15,5	82,7	7,5	0,3	100
1985	0,0	11,1	58,6	18,7	77,3	7,1	1,0	100
1990	0,0	9,7	56,6	23,9	80,5	5,1	0,0	100

N.B.: The 1865-1910 data are referred to *supply* of energy, the following to *consumption*.

Sources: 1865: Bardini, 1991 : tab.5;
1870-1910: Bardini, 1998: tab.3;
1920-1990: Clò, 1994: tab.8

Tab. 3: Production of electricity by primary source in Italy, 1900-1990 (%)

<i>Selected years</i>	Hydro-power	Geo-power	Nucleo	Coal	Oil	Natural gas	Total	Foreign depend.*
1900	69	0	0	31		0	100	31
1910	83	0	0	17		0	100	17
1920	96	0	0	4		0	100	4
1930	97	1	0	2		0	100	2
1940	92	3	0	5		0	100	5
1950	88	5	0	4	2	1	100	6
1960	82	4	0	4	7	4	100	10
1965	52	3	4	5	33	3	100	37
1970	35	2	3	6	49	5	100	58
1973	27	2	2	4	62	3	100	67
1975	29	1	3	5	57	5	100	64
1980	26	1	1	10	57	5	100	70
1985	24	1	4	16	41	13	100	72
1990	16	2	0	17	47	18	100	81

* it comprises also direct purchases of electricity from abroad

Source: Clò, 1994, tab.14

Table 4. ENI 1953-1990 : some economic indicators

	Oil & NGL production <i>000 tons</i> a	Oil Reserves <i>millions of barrels</i> b	Natural gas <i>billions of mc</i> c	Employment d	Endowment fund <i>bill. constant £</i> e
1953	86	n.a	1.2	16.000	2,00
1962	4.200	n.a	6.9	56.000	0,69
1969	8.200	n.a	11.0	63.000	6,64
1972	11.700	n.a	12.3	79.000	11,57
1975	14.900	n.a	14.6	100.000	10,44
1980	17.300	<2.000	13.8	123.000	18,76
1985	14.300	2.149	13.9	129.000	60,63
1990	17.800	2.881	17.7	106.000	61,40

Sources: col.a:

col. b,c: Grant 1991, p.252, tab.1, , Grant 1993, pp. 220-1, tab. 2.5, 2.6, 2.7, 2.8

Col d,e: Barca -Trento 1996, pp.198-9, tab.1