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The Concept of Virtual Economy in Mexico's Energy Sector:

The Legal Challenge

*George Baker*¹

The possibilities and constraints of the energy sector in Mexico are prefigured by the legal and policy framework in which lenders, private developers and contractors are allowed to operate in Mexico. The ability of the government to finance energy projects in Mexico will be governed as much by legal issues as by commercial opportunities.

This paper argues that during the period 1991-94, the Mexican Government established a creative conceptual framework that can be adapted to meet the increasingly exacting requirements of prospective project lenders to the energy sector.

By the end of 1994, however, the work to adapt this framework had not yet begun, thereby putting in jeopardy the vision that private financing could fund infrastructure needs in electric power generation and other areas.

I. Introduction

The hallmark of the presidency of Carlos Salinas (1988-94) was modernization of the administration of the public sector. In the energy sector, but mainly in the government's petroleum supply agency, Pemex, the goal of modernization has been the achieving of international competitiveness. As Francisco Rojas (Pemex CEO, 1987-94) put it, Pemex "is rooting itself as a highly efficient firm, capable of competing on an equal footing with the largest of international consortia and acting as a pole of attraction in industrial development."²

Since 1989, the West has seen the progressive evolution of the command economies of Eastern Europe and the Former USSR. The general observation is that, on a sector-by-sector basis, these centralized economies have evolved toward either market economies or mixed economies (Fig. 1).

This general trend has not been limited to Eastern Europe, however. Throughout the world, economic sectors that were once under the management of a command economy

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 2. Pemex, Annual Report, 1993, p. 5. Message from the Director General.
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have now transformed themselves into market or mixed economies.³ In Mexico, important sectors of an economy that was tightly closed in the 1960s, '70s and early '80s began, in 1985, to move toward a market economy. Mexico's entry into GATT in 1985, NAFTA in 1993 and the OECD in 1994, are symbolic steps of this progressive commitment toward a market economy. Pemex, meanwhile, has insisted on the continuation of the basic command model for the hydrocarbon sector.⁴

In petrochemicals, Pemex and the government agreed to increase the degree to which there would be a mixed economy: both Pemex and private capital would have access to raw materials and markets for "secondary" petrochemicals.

In the matter of electricity generation, in late 1992, Pemex, the Federal Power Utility (CFE) and the Commerce Ministry agreed that henceforth Mexico would operate as a mixed economy: a new law and set of regulations now permit the private generation of electricity through the mechanisms of a co-generation plant or an Independent Power Producer (IPP). In the core businesses of Pemex, however, there was no interest whatsoever in either a market or mixed economy (Fig. 2).

II. *The Search for International Benchmarks in PEMEX*

Hydrocarbon-sector planners, led by Adrián Lajous, Ernesto Marcos and José Luis Alberro (Pemex's SVPs for Investment Policy, Finance, and Gas Distribution), developed a

3. There can only be an analogy between the Mexican economy and that of the Former Soviet Union. The Mexican system of government unquestionably corresponds to the command model: the legislative, judicial and local branches of government are, in substance, sub-sets of the executive branch. All major economy players in Mexico are either government agencies (PEMEX, CFE, railroads), government contractors (e.g., PROTEXA, ICA, BUFETE INDUSTRIAL) or thrive by the monopolistic or oligopolistic favors granted by the government (e.g., TELEVISA, TELEFONOS DE MEXICO, CEMENTOS MEXICANOS, VOLKSWAGEN, CHRYSLER, FORD, GM). In such a world of what David Asman (Wall Street Journal, Oct. 5, 1994, p. A18) calls "executive paternalism" there is a loose sense in which government criteria and review processes coordinate the resource-allocation decisions and operations of the major actors in the economy. No one doubts that the government has the effective veto power to stop any actor from taking an investment decision: it simply withholds "permits."
4. Petroleum law in Mexico dates back to 1901. Up until 1938 the Mexican State's relationship to the oil industry in Mexico was that of a regulator. See Clagett and Valderrama, *A Revised Guide to the Law & Legal Literature of Mexico*, pp. 286-95 (1973). An earlier discussion, which gives a bibliography of Mexican court cases dealing with petroleum law, is Roscoe B. Gaither, *Expropriation in Mexico: The Facts and the Law* (New York: William Morrow, 1940).

new model for economic growth. Beginning in 1989, Pemex began to seek international standards and benchmarks for its operations both upstream and downstream.⁵

Starting in January of that year, the government took draconian measures to reduce the size and influence of the oil union, the cost of which to the economy, by some estimates, was equivalent to as much as \$2-3/bbl of oil production. Where, at the beginning of 1989, Pemex had roughly 215,000 employees, by the beginning of 1994 Pemex had cut roughly 100,000 jobs from the payroll.

McKinsey & Company, along with other blue-ribbon consulting firms such as SRI International and Arthur D. Little, Inc., was hired by Pemex to assess the international competitiveness of its operations. McKinsey recommended its standard formula: cut staff, reorganize into core business units,⁶ and regulate the relationships between business units by means of transfer prices for goods and services. The McKinsey formula, which is designed to help companies become more competitive in market economies, took on an unexpected meaning in the context of a state monopoly. In Mexico, supply decisions and demand assessments of the domestic market are not taken on the basis of an assessment of competitive forces, and, for this reason, there is no true market mechanism at all in Mexico.

In environmental policy, planners decided that the old Azcapotzalco refinery could not be operated within environmental norms—and, abruptly, on March 18, 1990, President Carlos Salinas announced the refinery would be closed immediately. In subsequent years Pemex upgraded the quality of its refined products, introducing unleaded gasoline and low-sulfur diesel and fuel oil. In addition, a major study on Mexico City air quality was carried out jointly by Pemex, the Petroleum Institute (IMP) and the Los Alamos Laboratory of the U.S. Department of Defense (the final report of which was completed in mid-1994).

In the areas of natural gas transmission and distribution, Pemex retained Gaz de France as a consultant in 1993. Pemex reasoned that France's experience with a mixed economy in the natural gas industry might lead to new insights about gas transmission and dis-

5. A discussion of the evolution of Pemex modernization programs since 1970, but with emphasis on the period 1988-93, is Héctor Leos Chávez, *Origen y naturaleza de la modernización de Petróleos Mexicanos* [Origin and nature of the modernization of Pemex] (Mexico DF: UNAM [Programa Universitario de Energía], 1993). Related discussions of the reorganization of Pemex are Francisco Colemanares, *Pemex: Crisis y Restructuración*. (Mexico DF: UNAM [Programa Universitario de Energía], 1991) and Angel de la Vega Navarro, "Ouverture et libéralisation de l'économie et réorganisation de l'industrie pétrolière au Mexique," *Revue de L'Énergie* (Paris), No. 456: 95-104 (Février 1994).
6. The unveiling of the plan to reorganize Pemex into core business units took place in early June of 1992, apparently as one of the government's responses to the Guadalajara explosions of April 22. The new "organic law" of Pemex was approved by the Congress on July 17, 1992. See López-Velarde, *Mexico's New Petroleum Law: The Internal Reforms at Pemex and the North American Free Trade Agreement*, THE INT'L LAWYER XXVIII(1): 1-27 (Spring, 1994), and Berdeja-Prieto and López-Velarde, *Mexico*, INT'L FIN. LAW REV., (Oct. 1994).

tribution.⁷ In the area of public safety and environmental policy, Pemex established a high-level office that reports directly to the Pemex general manager.⁸

III. The Concept of Virtual Economy

In this way, Pemex planners, recognizing the limitations of a centralized, command economy in the hydrocarbon sector, devised a new theoretical vision, here called the Virtual Market Economy (Fig. 3). The idea would be to achieve the efficiencies of a market economy while still remaining within the legal framework of a state monopoly. The new vision was that of a virtual market economy, one that would stimulate intracompany competitiveness and excellence by simulating market-economic conditions. Pemex operating units would be held accountable for international reference prices and performance benchmarks. Achieving such standards would be tantamount to achieving market competitiveness. This goal was at the heart of the Pemex modernization programs of 1989-94.⁹

Pemex, which by July 1992, would have a new organic law that established three operating energy units (plus a petrochemical unit), would hold itself responsible for meeting international standards of performance in its distinct areas of operations. Thus, in February of 1991 Pemex contracted with Triton International, Inc., of Houston to drill the first turnkey well done under direct contract with an American company in decades. (In the years of the Oil Boom, 1977-82, drilling contractors like Houston-based Sedco operated in

7. Such insights, however, are likely not to square with the practices of Mexico's NAFTA partners. In France, the concept of open-access in gas transmission is viewed negatively, while in Canada and the United States, the concept is credited with stimulating demand and lowering costs to the consumer.
8. Both the environment and public safety have been at risk by the operations of the state oil and electric-power agencies in Mexico. The Administration of Miguel de la Madrid saw the explosion of an LPG plant in a Mexico City lower-class suburb in 1984, and the Salinas Administration saw the explosion of gasoline-filled sewer lines in a lower-class neighborhood in Guadalajara on April 22, 1992. In each instance hundreds of lives were believed to have been lost.
9. The distinction between a mixed and a virtual economy is made in the Mexican case on the following grounds: A mixed economy would have the state as co-producer, co-transporter, co-distributor; in Mexico there are no co-producers in petroleum at all. There are private jobbers, who truck Pemex petroleum products under contract with Pemex, and there are a dozen gas LDCs that serve tiny residential markets. So, in hydrocarbon energy, Pemex is the sole producer and virtual sole-transporter and distributor (as well as virtual self-regulator). Nevertheless, Pemex (under Lajous's leadership) insisted that it would achieve the efficiency of a market economy (the Pemex code word is "international competitiveness") by incorporating international benchmark prices and performance standards—but not by introducing international competitors. Competition, therefore, will be indirect, but real. It is the indirectness that justifies the distinction between a mixed economy à la PDVSA and a "virtual market economy" à la Pemex.

Mexican waters, but as sub-contractors to Mexican contractors like Permargo.)¹⁰ The Triton contract showed Pemex that normal drilling time in the Gulf of Campeche should be in the area of 125 days (and possibly under 100 days), not the 265 days that Pemex typically took to complete an offshore well.¹¹

The upshot of these and other steps was a striking veering away from the worldwide trend toward either a market or mixed economy. In the model of the Virtual Market Economy Pemex seeks debt-financing¹² or off-balance-sheet financing (via leases and stand-alone, project financing¹³) for programs that meet international standards of performance, output and environmental quality (Fig. 3).

Pemex, as a state monopoly, proposes to keep its high ground as a true command economy, and is unfazed by the moves of countries like Venezuela, Argentina, Bolivia and Colombia toward a mixed economy in upstream and downstream operations. Pemex's bold move has been toward a Virtual Market Economy (Fig. 4).

A closer look at the innovations in hydrocarbon policy in other countries (like Venezuela, for instance) that have opted in favor of a mixed economy shows that it's usually the case that not all industrial areas are included in the mixed economy model. Thus, Venezuela permits co-production (hence, a mixed economy) in exploration and production, but not in domestic refining or local distribution. In some instances, government policy permits private investment in multiple areas, but builds in some anti-trust precautions. In Argentina, the government adopted a mixed economy model, and wisely separated the market functions of gas transmission from gas distribution, letting investors choose between transmission lines or distribution systems, but not both (Fig. 5).

10. Ixtoc I, the offshore well that went out of control for over six months in Campeche in 1978-79, was operated by Sedco, under contract with Permargo. (George Bush and Jorge Díaz Serrano were among the founders of Permargo.)
11. Pemex, Gerencia de Información y Relaciones Públicas (GIRP), Boletín 322/91, Sep. 24 de 1991. Triton drilled the exploratory well Takín No. 1 in the Bay of Campeche in 127 days. In late 1991 senior Triton management believed the time could be reduced to as few as 90 days. GIRP, Boletín 121/91, 19/IV/91, says that Triton presented the best option for Pemex in a bidding process in which Mexican and international companies competed.
12. On November 4, 1990, President George Bush, meeting with his Mexican counterpart in Monterrey, announced U.S. Ex-Im Bank funding in the area of \$6 billion for oil production and the development of hydrocarbon reserves. Under the Bush Administration, the U.S. Government was very supportive of Pemex's Virtual Market Economy model, as it meant a new source of contracts for U.S. oilfield service and equipment suppliers.
13. As of mid-1994, the only instance of non-recourse financing in the energy sector in Mexico has been the funding for the jointly-ventured refurbishing of a Shell refinery in Houston. Bankers observed that the success of this project hinged on Shell's participation and the Texas location of the refinery assets as much as it did on Pemex's ability to supply crude oil and guarantee 45 Kbd of product off-take. Said differently, the project would not have been funded on a non-recourse basis without the participation of an international company and had the refinery assets been in Mexico.

IV. Accomplishments and Criticisms of Salinas's Administration of PEMEX

Throughout the six-year Salinas presidency Pemex maintained oil and gas production steady, at about 2.6 MM b/d and 3.5 bcfd. Oil exports were also steady, at about 1.3 MM b/d.¹⁴ Pemex's payroll was cut back nearly 50%, and the control of the Oil Union on Pemex hiring was broken.

On the qualitative side, one of the accomplishments of the Salinas Administration was holding firm in regards to foreign investment in the petroleum sector during the NAFTA negotiations (1991-93). Mexican negotiators turned back every attempt to modify the existing practices (codified or not¹⁵) in the energy sector.

A second accomplishment was the creation of a new economic model — the Virtual Market Economy. This model succeeded in bringing in perhaps twenty billion dollars in debt-instrument funding for Pemex infrastructure needs. In addition, it brought in an extra billion dollars in non-recourse project financing for Pemex's joint venture with Shell USA in the to-be-refurbished Houston refinery at Deer Park.

Yet this model has its limits and its critics. Some critics say that having a Virtual Market Economy does not bring all of the efficiencies of a market economy, as the "decision to correct course" is again taken by the command model, not as a result of the conflict of market forces.¹⁶

14. In the weeks following the Iraqi invasion of Kuwait in early August, 1990, Mexico announced that it would help cover the world oil supply shortage by increasing exports by 100 Kbd, a symbolic gesture regarded as controversial inside Pemex and the Energy Ministry, owing to the risk of damaging reservoirs from over-production. (Pemex's safe production margin was in the neighborhood of 20 Kbd.)
15. It was widely believed outside of Mexico that there was no legal, constitutional or regulatory restriction that would have prevented the Government from authorizing foreign investment in gasoline retailing. The only constitutional restriction is that title to petroleum products is to remain with the State until sold to the consumer—thereby putting the retailer's earnings on the basis of a volume-indexed commission. Mexican service stations are currently operated by private parties on this basis, and foreign operators (had they been authorized) would have been willing to compete under the same regulations.
16. Any decision to correct course, in turn, is a slow and uncertain one, given the culture in Pemex that requires a complex checking up and down the chain of formal and informal command. In June, 1981, Pemex's CEO, Jorge Diaz Serrano, tried to "correct" the export price of Mexican crude (by lowering the price \$2/bbl)—only to be forced out of office for his "failure" to get prior approval from the Economic Cabinet. As a result of the ensuing failure to correct prices, Mexico's oil exports, which were in the area of 1.5 million b/d in April, fell precipitously—while bureaucrats argued pricing philosophy—to under 500 Kbd in July. This catastrophic miscalculation precipitated capital flight, then a painful series of devaluations that were only corrected during the Salinas Administration, some ten years later.

Their comment, in short, is that successful simulation of market conditions is still a risky way to stimulate market competitiveness.¹⁷

Historically, Pemex has been an organization that responds more to political considerations than to quantitative measures of performance. A case in point is the time warp in relation to the publication of Pemex's operating regulations. While the new "organic law" of Pemex was issued in July 1992, two years later Pemex's operating regulations (*reglamento*) continue to be those issued in August of 1972. Why? The main reason is that Pemex's operating units do not agree among themselves as to the assignment of assets and liabilities that should correspond to each unit. A second point of disagreement concerns the assignment of public trust and responsibility (e.g., public and industrial safety, care of the environment, quality assurance and reliability of supply).

Pemex units are also in disagreement with cabinet ministries, mainly Commerce, Finance and Energy, regarding the role of private investment and the weight that should be given to the demands of prospective lenders. (In the view of the ministries, the funding premise of the electric power development plan for the period 1995-2004, namely, that a significant share of investment capital would come from private lenders who would not ask for a sovereign guarantee, is currently in question mainly because they fear that funds will not be made available.)¹⁸

Other critics say that the model provides for no market incentive to lower production costs, and that, at the end of the day, it brings in too little money for the development of Mexico's energy infrastructure and the expansion of energy markets.¹⁹ Where in the first

17. An example of this policy risk is in the area of private electric power generation. According to the new law of December 1992 and the operating regulations of May 1993, private capital may invest in electric power generation, but only on the condition that power in excess of internal consumption be sold to the CFE. The Virtual Market Economy model is able to provide reference prices for most, but not all of, the elements needed to make a fundable business: Pemex will be able to quote U.S. Gulf Coast reference prices for wellhead gas and gas transmission, thereby simulating U.S. market conditions, but the CFE is limited in its ability to set consumer prices by considerations of social policy that come from the Commerce, Finance and Energy Ministries. How, then, will a private Independent Power Producer (IPP) be able to invest in a power plant if he knows that only his costs—but not his tariff rates—will be indexed to international prices? The concern is that prospective non-recourse lenders will not be forthcoming for any such power projects in Mexico.
18. These policymakers point to the stunning failure in October of 1993 of private financing for the so-called Carbón II coal-fired electric power plant. The project, led by Mission Energy, a unit of Southern California Edison, needed about \$2 billion in non-recourse financing for a 1.6 GW facility (A year later Mission, which closed its office in Mexico City, announced that it would seek business opportunities in China.) Additional discussion of financing issues is in George Baker, "Challenges in petroleum policy for the next president of Mexico," *Oil & Gas Journal*, Jan. 17, 1994, pp. 3343
19. The Virtual Market Model allows for (a) capital reinvestment of Pemex's earnings, (b) balance-sheet debt financing by Pemex, (c) loan-guarantee financing from other governments (e.g., U.S., Canada, Japan Ex-Im Banks), (d) commercial, non-recourse financing (*see* note 5, *supra*, in relation to the Shell joint venture). This impressive range of funding mechanisms excludes the investments or contractor-advanced funds that could be available under either a Mixed or Virtual-Mixed Economy.

quarter of 1994 Norway and the United Kingdom together increased oil production by 22%, to 4.9 million b/d from a previous 4.0 million b/d in the first quarter of 1993, Mexico oil production at 2.6 million b/d has been flat for most of a decade. Where the North Sea has an aggregate annual capital budget at the level of US\$9-10 billion, Pemex typically receives from the government's finance ministry only US\$2 billion for investments in E&P in a given year. Scaled to the investment levels of the North Sea, Mexico's E&P efforts are annually under-funded by nearly \$5 billion dollars.²⁰

Finally, in relation to regulations, the Virtual Market Economy relies basically on self-regulation by Pemex and the CFE.²¹ The setting up of a Regulatory Energy Commission in 1993 to serve as a counterpart to the U.S. Federal Energy Regulatory Commission (FERC) is, in theory, a step forward. Creating a Mexican FERC for electricity matters, however, is still a long way from establishing local public utilities commissions (PUC) whose main responsibility is to serve as a quasi-transparent public forum that balances the interests of energy producers and transmission companies (Pemex and the CFE) with those of local distributors and consumers. In the view of outside observers, the problem of not having the equivalent of PUCs in Mexico seems intractable given the historic muscle advantage that Pemex and the CFE have been able to flex within the Mexican political system. Not even the creation of a cabinet-level Energy Ministry in the early 1980s has materially affected the virtual independence with which Pemex and CFE have been able to operate.

V. A New Policy Option — The Virtual Mixed Economy

It is likely that macroeconomic planners of the new administration of Dr. Ernesto Zedillo will want a continuation of the basic command-model economy for the hydrocarbon sector. The need for major funding for onshore gas production in the North and deep-water oil production in the Bay of Campeche will compete for equally demanding needs for funding of social and economic infrastructure in Chiapas, Oaxaca, Michoacán, Guerrero, and other areas noted for economic recession and political unrest. This competition for federal funds may lead to a reappraisal of the administration of Pemex by the post-Salinas government.

The programs of the Salinas Administration implicitly pointed to a new, yet untried, policy option: a Virtual Mixed Economy designed to attract funds for both upstream and downstream projects (Fig. 6).

Upstream, the new model would require that oil and gas producers work as contractors for Pemex, but be paid by a compensation mechanism that would index reward to the efficiency of production. The important points here are that ownership of the resource base would remain with the State and operational control would remain with Pemex thereby maintaining full state sovereignty. This model would entail neither sharing of production

20. The figure of \$5 billion would be accurate provided that the difficulties and costs of production were the same. In the North Sea, however, nominal production costs are higher than those of Mexico.

21. A discussion of regulatory issues is discussed in George Baker, "Mexico must emulate U.S., Canada gas rules to boost its gas industry," *Oil & Gas Journal*, Oct. 24, 1994, pp. 30-34.

nor profits.²² With little new direct investment of its own, Pemex could gain the benefits of new dry gas production in the North and new reservoir development and management expertise for difficult plays in Campeche.

Downstream, the model could be used to fund infrastructure needs like the fifteen-year overdue natural gas pipeline to Mexicali (the hometown of President Ernesto Zedillo) and the nearby Rosarito thermoelectric plant. Another similar project needing funding is the new gas pipeline that is to extend 700 kilometers from the gas fields of Villahermosa to the electric power facility in the Mérida region (known as the Mérida III project).

Short of "privatizing pipelines," or incurring more public-sector debt to fund upstream development and gas imports,²³ the Virtual Mixed Economy offers perhaps the only fundable permutation of Mexico's traditional Command Model that will permit the needed expansion of both the hydrocarbon and electric-power sectors. The task of implementing that model will be as much a challenge for legal minds as it will be for market planners, developers, regulators and prospective lenders. The "legal issue" is crucial and is not about changing the niceties of contractual language.²⁴ The legal framework of a new Virtual Mixed Economy will have to be built on institutional arrangements that balance the competing interests of Pemex, the Federal Power Utility (CFE), developers, lenders, consumers—as well as the environment and public safety.

As things stood at the end of 1994, investors doubted that they could trust the Mexican court system, where ambiguity and unpredictability undermine expectations of equity by Mexican and international companies. Here there are two matters: the Mexican courts have never decided issues of Pemex liability to either the CFE or IPPs for costs associated with problems of fuel supply; but, even if such cases had been decided, Mexican judges, operating under a civil-code legal system, have no obligation to decide on the merits of similar cases in the same manner.²⁵

22. The devising of a politically acceptable compensation mechanism is a controversial, if technical, matter, that depends on the political will and goodwill of the parties. The normal approach to compensation is that from project revenues E&P contractors would be reimbursed their capital and lifting costs then compensated for reservoir development and management services (RDMS) as a negotiated percentage of the Income After Capital and Lifting Costs (IACLC). Pemex's gross profits would be the gross income less (a) lifting costs, (b) allocation for capital recovery and (c) RDMS fees. The complexity of this issue is increased in the case of natural gas, as the compensation mechanism in Mexico would have to start from an equivalent Gulf Coast market price. The "price equivalency test," in turn, would have to take into account differences in the BTU content of the gas and wellhead-to-grid transportation values.
23. A discussion concerning the outlook for natural gas imports is M.A. Kanter and P H. Kier, *Mexican Demand for U.S. Natural Gas* (U.S. DOE, Sept. 1993 (available from NTIS: report# ANL/4EAIS/TM-104, Tel. [703] 487-4600).
24. A logical place to begin fresh legal analysis is the role of energy in NAFTA. See G. C. Watkins, "Constitutional Imperatives and the Treatment of Energy in the NAFTA," *Oil Gas Letter* (ESC Publishing), XII (7): 199-205 (July 1994).
25. A good discussion of the risk of the court system in Mexico is contained in a Pemex loan prospectus issued by Goldman, Sachs in November, 1994.

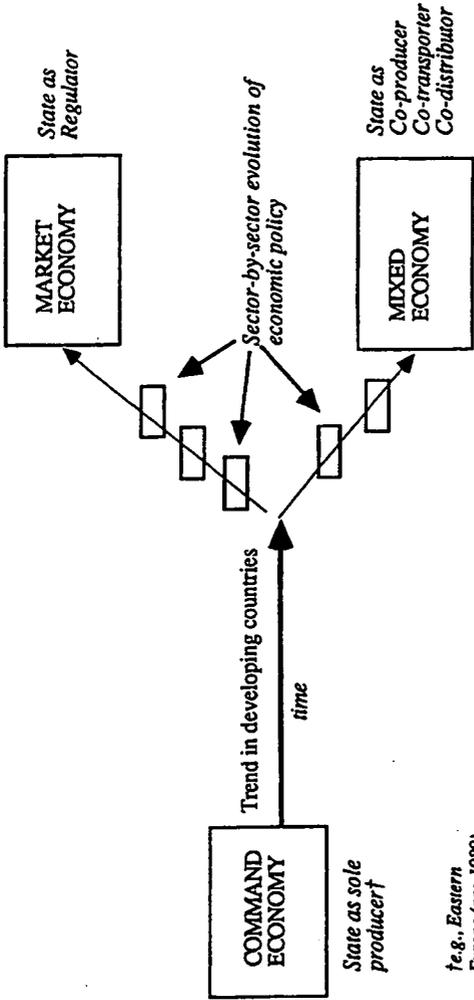
In April 1995, with the Mexican economy in a severe recession, the government announced a change in investment policy in the energy sector: hoping to break the deadlock on project financing for private electric power projects (and, collaterally, to convince Mexicans that their flight capital should be repatriated), a law was passed to allow private ownership and operations of natural gas pipelines and storage facilities. For such a law to have substantive effect, implementing regulations for natural gas transmission and distribution need to be passed.²⁶ The importance of this policy innovation for the present discussion is this: Pemex's model of a command economy will be undermined to the extent that government regulators come to have an influence on the terms and tariffs of a policy of open access to Pemex's pipeline system. If the government program succeeds, then in the area of natural gas transmission the economy will have shifted to a mixed economy. Most industry observers comment that the government will have to consider additional steps to achieve its financing and energy policy objectives: they note, for example, that having new gas lines does not produce new gas supplies.

VI. Conclusion

If Mexico is to gain the full benefits from NAFTA,²⁷ it will not be enough that Pemex is competitive: Mexico's export sector will grow in part because of market pressures in the energy sector that work to reduce the costs—and the prices—of energy inputs. For this to happen, the absence of trust and expectations of fairness that characterized much of the inter-governmental-agency debate around energy policy during the Salinas years will have to be eliminated. The government must create a new atmosphere, one that will win the support of Pemex and the CFE and that will attract the long-term commitment of a new class of Pemex contractors, electric power developers and lenders. For any of this to take place, a dramatic change of heart must take place in the assurances afforded by Mexico's legal system.

26. The government reasons that by allowing private investment and operation of natural gas pipelines the long-delayed funding for the electric power project at Samalayuca will materialize. As already noted, the Salinas administration over the course of two years was unable to settle major policy differences between agencies and ministries regarding natural gas regulation. The new law calls for regulations within 180 days.
27. As the first eighteen months of NAFTA have amply shown, NAFTA also poses risks, not only for Mexico but for U.S. border states as well. The author's lecture to the Heritage Foundation on February 9, 1995, examines the risks to Mexico associated with the dominant influence of intrafirm trading in Mexican manufactured exports. The arguments appear in expanded form in "El sector externo y recuperación económica en México," *Comercia Exterior* (Mexico City), May, 1995.

Fig. 1
Evolutionary trend toward market or mixed economies in developing countries



G. Baker 8/30/94 ver. 1.1

BAKER & ASSOCIATES, Oakland, California, May 22, 1995

Fig. 2
 Sectors of the Mexican economy move toward market and mixed economies
Hydrocarbon sector in Mexico operates in a command economy

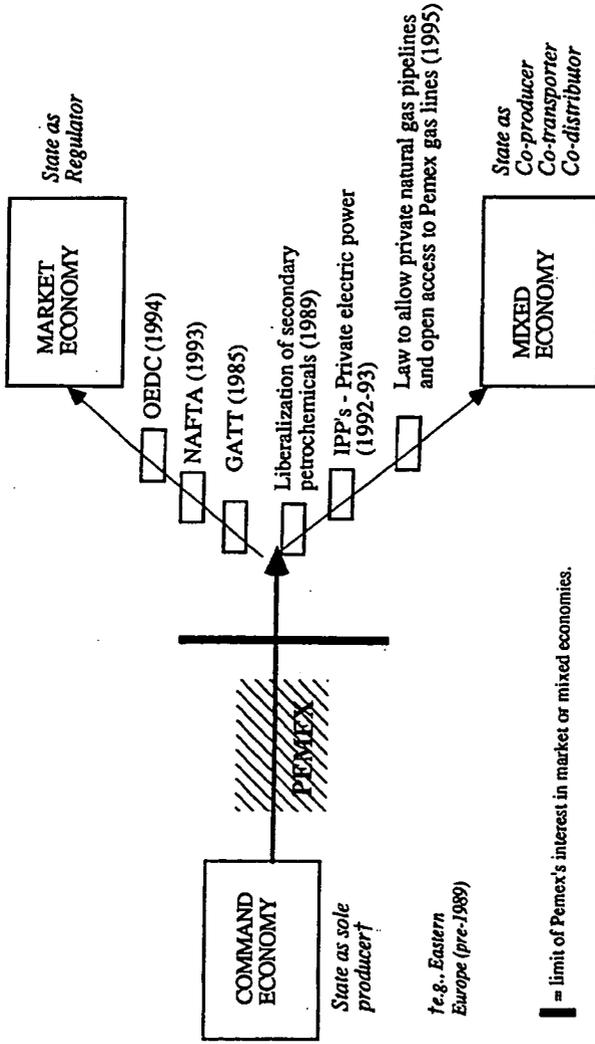
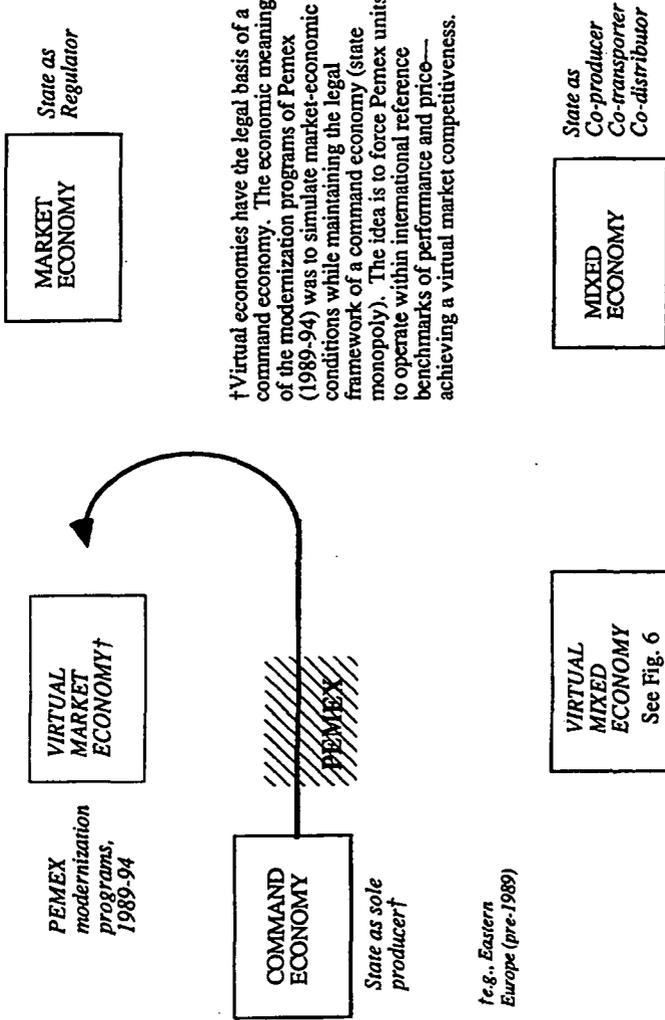


Fig. 3
 Hydrocarbon sector in Mexico in 1989-94 developed virtual market economy
Virtual Market Economy attracted debt-instrument investors

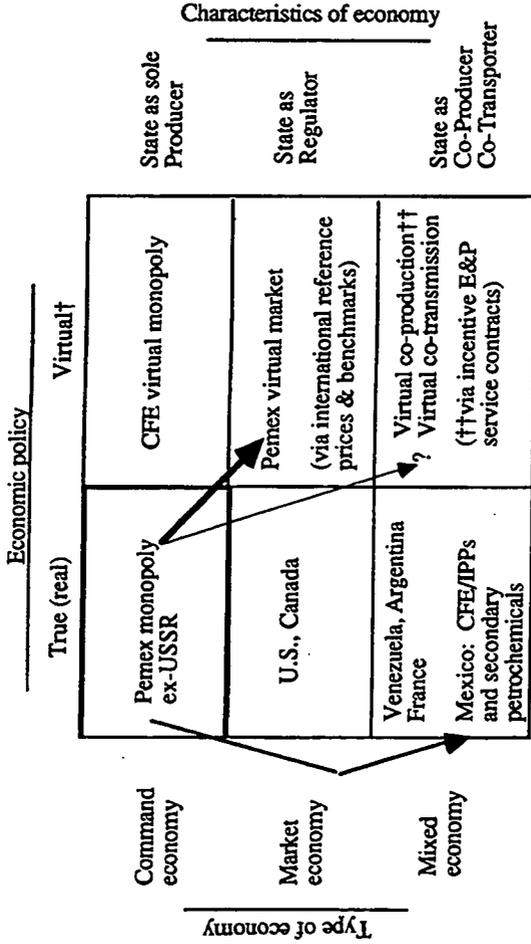


f.e.g., Eastern Europe (pre-1989)

G. Baker 8/30/94 ver. 1.3

Fig. 4

Legal and policy frameworks and directions for national energy policy
 Mexico's historical preference is the true command economy with innovations



Source: G. Baker 8/26/94
 ver. 1.4

Fig. 5
Legal and policy frameworks and directions for natural gas policy
 Countries with mixed economies sometimes reserve some activities to the State

Economic policy regarding natural gas		Characteristics of economy	
True (real)		Virtual†	
Type of economy			
Command economy	Pemex monopoly (E&P, GP, T, D)	CFE dependence on Pemex	State as sole Producer
Market economy	U.S., Canada (E&P, GP, T, D) (E&P, GP, T, D)	Pemex virtual market (via international reference prices & benchmarks)	State as Regulator
Mixed economy	Venezuela (E&P) France (E&P) Argentina (E&P, GP, T, D)	Virtual co-production† Virtual co-transmission*	State as Co-Producer Co-Transporter

E&P = Exploration & Production
 GP = Gas processing
 T = Gas transportation/transmission
 D = Gas distribution

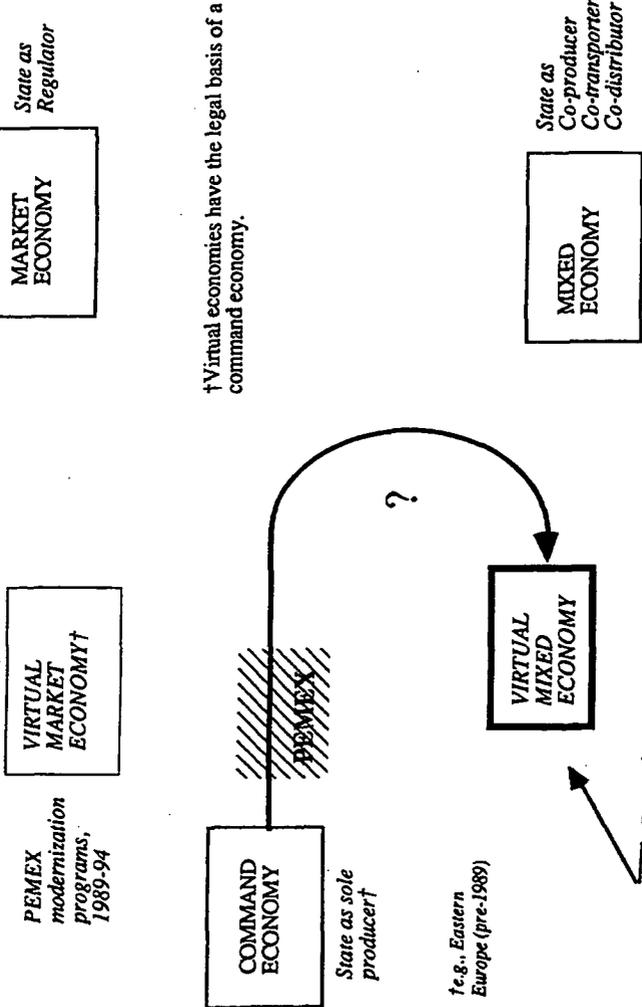
† via incentive E&P service contracts
 * via built-operate-transfer (BOT) leases

Source: G. Baker 8/26-30, 1994

Fig. 6

Hydrocarbon sector in Mexico needs major ramp-up in investments

Virtual Mixed Economy offers untested policy option



G. Baker 9/30/94 ver. 1.0