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West Europe Report

(FOUO 32/81)

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WEST EUROPE REPORT

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CONTENTS

ENERGY ECONOMICS

ITALY

Cement Industry Oil to Coal Conversion
(Eugenio Occorsio; IL SOLE - 24 ORE, 12 Jun 81) 1

ECONOMIC

FRANCE

Aerospace Industry Urged To Make Still Greater Effort
(Pierre Langereux; AIR ET COSMOS, 30 May 81) 3

ITALY

Report on State of Nation's Economy
(Guja Bacchilega, Chiara Fornasari; IL MONDO, 15 May 81)..... 5

POLITICAL

FRANCE

Reactions to French Vote in African Nations
(Paris JEUNE AFRIQUE in French 27 May 81 pp 26-29)
This article appeared in JPRS L/9794, 16 Jun 81, No 725
of SUB-SAHARAN AFRICA, pp 1-7.

Reaction to Mitterrand Victory Reported
(Related articles, various sources, dates)
This article appeared in JPRS L/9801, 19 Jun 81, No 726
of SUB-SAHARAN AFRICA, pp 34-37.

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SPAIN

Tejero Interviewed in Prison by FRG Journalist
(Erik M. Rickert; STERN, 27 May 81) 14

MILITARY

ITALY

Contract on Sale of Warships to Iraq Signed
(Alvaro Ranzoni; PANOMARA, 1 Jun 81) 17

GENERAL

FRANCE

'New Industry' Seen Being Put in Orbit by Ariane
(Jacques Houbart; PARADOXES, Winter 1980)..... 20

ITALY

Lombardy Region's Fight Against Rabies
(CORRIERE DELLA SERA, 30 May 81)..... 27

Dog Owners' Cooperation Poor, by Maia Beltrame
Rabies Spread Into Italy, by Giorgio Gagliardi

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ENERGY ECONOMICS

ITALY

CEMENT INDUSTRY OIL TO COAL CONVERSION

Milan IL SOLE - 24 ORE in Italian 12 Jun 81 p 4

Article by Eugenio Occorsio: "Cement Industry Chooses Coal To Limit Energy Consumption"

Text Protests Over Imported Minerals Caution Money

During 1980 practically all of the increase in Italian cement production was covered (from the energy point of view) by using coal. In fact, thanks to the progressive reconversion of the factories, 14.4% of the product is the result of production fueled by coal as against 9.6% for the previous year. During the same period of time, the total production went from 39.2 to 41.8 million tons with an increase, therefore, of slightly more than 6%.

On the basis of these facts, AITEC (Association of Cement Producers) in the past few days has added its voice to the many protests against the no-interest deposit of 30% on imports instituted by the Government. AITEC has asked that coal imports be exempt from this regulation by claiming that otherwise it would place a rather heavy handicap on reduction in consumption of fuel oil and, therefore, on petroleum imports.

In fact, a recent Confindustria study on energy sources indicates that this sector itself, a heavy consumer of fuel oil, has been the first to pave the way toward coal. All of the programs and the timetables projected in 1976 for factory energy reconversion have been achieved. Some figures: in 1977, the cement industry was running 71.8% on fuel oil, 23.7% on natural gas and 4.2% on coal.

The following year the percentages became 74.9%, 19% and 5.6% respectively. In 1979, fuel oil consumption still accounted for 73.2% while gas declined to 17% and coal jumped to 9.6%. The following year, as previously mentioned, 72.2% of the factories were running on fuel oil, 17% on gas and 14.4% on coal. Currently, 28 of the cement plants are coal-fired and another eleven are in the process of being converted. The number of these factories, Confindustria calculates, could reach 63 at the end of 1983.

The figure of 647 thousand tons of coal consumed in 1980 will surpass 1.5 million tons this year and possibly reach 3.5 million tons by 1983. The savings in fuel oil are on the order of two million tons for this period (next two years).

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These figures are significant in a sector where energy accounts for one-half of the total costs. Among other things, this same industrial sector is experimenting with using the airborne ashes from thermoelectric powerplants in the industrial cycle without qualitatively affecting the final product.

Confindustria, in its study, is stressing a series of other problems. The greatest handicap in the use of coal--the release of sulfur into the atmosphere--is, for example, finding a solution in the fact that the sulfates, in this case, remain in the product. Then there are the usual questions of incentives (which are absent despite the need for 200 billion in investments over the next five years). And, there is also another specific shackle that can be eliminated: the conversion of factories from oil to coal, maintains Confindustria, must not be subject to the issuance of building licenses.

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ECONOMIC

FRANCE

AEROSPACE INDUSTRY URGED TO MAKE STILL GREATER EFFORT

Paris AIR ET COSMOS in French 30 May 81 p 10

[Article by Pierre Langereux]

[Text] The French armaments industry had a turnover figure last year of 60 billion francs, including 25 billion francs (40 percent) for export. The aerospace industry accounted for 34 billion francs in 1980, of which 60 percent went for export: military aerospace activities accounted for 70 percent of the turnover total and civilian activities for 27 percent. In 1980, orders placed with the aerospace industry (110,000 persons) came to 35 billion francs. These were the gross figures announced by Jean Martre, general weapons representative, to AJPAE journalists.

"The status of the French aerospace industry is on the whole favorable," J. Martre stated. The aircraft structure and missiles sector will reach a peak of activity late in 1981 and early in 1982 which should last for another two or three years. The engine sector will also see a production increase at the same time, thanks to the CFM56.

The French aerospace industry is currently "at a high level of efficiency, with a happy financial basis and solid structure," the representative concluded. However, future difficulties are foreseen, for this industry is based on a high rate of export (60 percent) as compared to the United States (10 percent). In addition, it already has competition at the top of the line, from the U.S., and at the bottom, from increasing numbers of aeronautics industries (Japan, Italy, Spain, Brazil, Argentina, Israel, Indonesia). The recent Italian-Brazilian agreement on the AMX aircraft illustrates this developing competition at the lower end of the range for civilian and military aircraft.

"French industry must thus redefine the foundations for 'new growth' in the 1983-84 range, for the products being sold," J. Martre stated.

"The most important effort to be made pertains to military engines, radar and missiles," the representative explained. It is necessary among other things to prepare a new technological line to succeed the M53 generation and to devote the necessary effort to the next military engine, the M88, which will be a more multi-purpose apparatus. The delay which has developed in France with regard to airborne radar is not substantial, J. Martre said, but it can only be overcome with the next generation of combat planes, plans for which have now been postponed until 1995 (instead of 1992). With regard to other equipment, French industry has reached the

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same level as American technology and even leads in certain cases (multiplex exchange of information on aircraft). France is also very well situated with regard to civilian aircraft (airbus), helicopters (sales to the U.S.) and tactical and strategic missiles. It is necessary, however, to be prepared to keep up with the great progress being made in the developments pertaining to captors, self-direction and automation equipment, as well as the techniques of miniaturization, electronics and optronics, which will soon be involved in tactical missile design.

The future of Franco-German cooperation also merits special attention because of the scope of the projects underway: a future combat plane, antitank helicopter, third generation antitank missiles, combat tanks.

The task will not be an easy one because it will be necessary to deal with several fronts simultaneously. The acceleration of scientific and technological progress will become even greater in the years to come as a result of the efforts undertaken in the U.S. to retain the advantage over the USSR, and France will have difficulty keeping up with this pace. For example, J. Martre noted, France is already lagging in personnel skilled in the development of [logiciels] which are coming into massive use in aeronautics. Competition with the U.S., which is still favorable for French products thanks to monetary parity, will then become more keen, the representative believes. The increasing complexity of weapons systems poses technical and financial problems. Cost increases--five percent per year, like the gross national product, in recent years--will in the future become more acute in relation to a national product which is leveling off. This led the representative to say that eventually "we will no longer be able to afford the most modern planes in sufficient quantities."

In this connection, it will be interesting to see the directions in the new 1983-1988 draft law which will be the subject of a technical examination in the course of the second half of 1981, before being submitted to the new parliament in 1982 (first or second session), at the same time as the 1983 budget.

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ECONOMIC

ITALY

REPORT ON STATE OF NATION'S ECONOMY

Milan IL MONDO in Italian 15 May 81 pp 33-44

[Article by Guja Bacchilega and Chiara Fornasari: "Inflation is Still the Key to Everything"]

[Text] If government and business do not adopt urgent measures against inflation, the rate of price increases will not only remain high but might virtually explode. This warning comes from a highly qualified and traditionally cautious source, the scientific committee of IL MONDO, and it lends particular urgency to the report published in these pages.

Reports on the state of the economy are drawn up periodically for IL MONDO by a group of economists representative of the various schools and institutes of Italy. Since its first report was written in July 1978, the members of the group have been economists Marcello De Cecco, a professor of economics at Florence, and Luico Izzo, a professor of political economy at the University of Rome; Angelo Tantazzi, a professor of economics at Bologna; Luigi Spaventa, a deputy and professor of political economy institutions at the University of Rome (on "parliamentary leave") and a member of the Torre Argentina center; and Mario Monti, a professor of economics at the University of Turin and at the Bocconi, in Milan. Prof Monti was not available to take part in drawing up this report. The group was joined more recently by Innocenzo Cipolletta, director of ISCO [Institute for the Study of Economic Trends] and, for this occasion, Mario Baldassarri, a professor of political economy at Bologna. Others who have served on the committee are Minister Franco Reviglio and Paolo Savona, the general secretary for planning the budget ministry. Marcello De Cecco and Luigi Spaventa took part in the meeting but were not able to examine the final draft of the report.

Highlights [by Nicola Forti]

The international scene, of which the Italian economy is a part, looks particularly bleak. High U.S. interest rates have affected the cost of money in European countries despite the recession current in Europe. Recessionary policy has had modest effects on inflation but has worsened the already difficult productivity situation. Nor do inflation and growth seem likely to show any improvement before 1982.

On the other hand, the industrialized countries' balance of payments should show definite progress, provided oil prices do not rise sharply. Thus, Italian exports will encounter sluggish worldwide demand and aggressive exporting by other European countries. Italy's only glimmer of hope is in a possible fall in the U.S. market share caused by a high revaluation of the dollar.

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In the last months of 1980 and early 1981, the Italian economy went through a phase of high domestic demand sustained by investment and construction spending, which has restricted exports. On the other hand, consumer spending shows signs of slowing down.

The hole in the public-finance pocket (a 14 trillion lire government deficit in only 4 months) has worsened this situation by fueling the economy and creating new money. Only monetary policy has tried to head off expectations. But the obvious limits on credit control and the government's contradictory statements have compromised its credibility.

The treasury and the Bank of Italy occasionally talk about divorce, i.e. ending the bank's obligation to buy BOT's [expansion unknown, probably T-bills]. This would make it possible to control closely the enormous oscillations in the money supply caused by the treasury's erratic deficit. The greatest consequence of the divorce, namely the great variability in interest rates, especially in comparison with earlier rates, creates some perplexity: brokers become discouraged, and the long-term debt is hard to consolidate. Thus, the divorce should be performed gradually to avoid excessive repercussions on interest rates.

For months the government and parliament have been working on the budget and on cuts in public spending. It is still impossible to judge the effect of the cuts already approved (precise data is lacking on the means and timing of application), but a strategy of small cuts here and there certainly appears insufficient. Rather, it will be necessary to make structural changes to control spending:

- (1) by establishing a maximum limit on borrowing from the money market as a prime article of the budget;
- (2) by implementing the constantly ignored rule that provides for covering current and recurrent expenses;
- (3) by decentralizing part of the income on a regional basis and reducing the growth of payments to peripheral entities. That way, there would be an initial control over public expenditures at the local level, and the citizenry would be put in the position of comparing the quality of services received with the local taxes they have paid.

One thing is certain: strong measures are needed to reduce inflation. Any gradualist policy would certainly be made hopeless because it would not turn around the widespread inflationary psychology and because inflation might be given a push by outside events (oil, contracts, depression of the lira). The risk is, then, that inflation not only might not be reduced but might even reach levels never before seen.

Inflation therapy must solve three problems: costs, demand and psychology. All the contributors to the report agree on the necessity of a social truce that would cool off costs and prices and start a virtuous circle in which the drop in inflation would support exports and the lira. Mario Baldassarri has advanced a proposal to put a ceiling on wage indexation that is untaxed for both workers and businesses. Some say this action should be accompanied by a further restriction on demand in order to demonstrate an unequivocal intention to stop inflation. But it is equally important to have policies that are coherent and do not spoil expectations. Ministers ought to make few pronouncements, and they ought not to contradict each other.

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Rates should be increased very cautiously and equalizations set for long periods. Only this kind of public action can enable money managers to work in a context of certainty and to cool off their own pressure on prices.

The Two Possible Cures

The International Scene: The salient fact of the international economic situation is represented by the conflicting monetary policies of the major industrialized countries. In the United States, monetary policy is aimed entirely at containing the growth of the money supply within modest limits in order to reduce inflation. High American rates have induced European monetary authorities to set similarly high ones in order to avoid weakening their currencies with respect to the dollar, despite a decline or stagnation in their countries' productivity. Interest rates are at high levels both absolutely and relatively. The effects that these restrictive monetary policies have had on inflation in European countries have not yet been felt because their currencies' weakness relative to the dollar is causing considerable inflation. Forecasts for the next 2 years, assuming that real oil prices remain constant and raw material prices are weak, show a slow, gradual drop from an average inflation rate of 12 percent in 1980 to about 8 percent in 1982, or slightly higher than the average for 1976-79.

However, these policies have had much more marked effects on production. Forecasts are that the industrialized countries' PIL [Gross Domestic Product] will be stagnant or in mild recovery in the next 18 months. The low growth rates in 1981 and 1982 show widespread economic stagnation in the industrialized countries, although great uncertainty prevails in the short term concerning the U.S. economy pending approval of President Reagan's tax policy proposals.

In conclusion, then, the industrialized countries' balance of payments should improve in 1981, still assuming that real oil prices remain constant. The deficit in the exchange of goods and services should be significantly reduced in most industrialized countries, and their deficit seems likely to be financed as easily as in 1980. Another element in the international situation is the European countries' losing shares in the export market in 1980 to the United States and Japan. Assuming that the U.S. share is reduced proportional to demand, the European countries, including Italy, may regain at least a part of the market, but it is less realistic to assume that the Japanese share of the market will be reduced. Protectionist measures can probably be conceived that would bring some stability back to the market. In any case, Italy should have two objectives: to return to its 1978-79 export market share and improve the non-oil accounts in its balance of payments.

The Present Situation in Italy

The last months of 1980 seem to have been marked by a recovery in production largely attributable to domestic demand. Indeed, a detailed examination of its components shows that investment is taking place at a hitherto unequalled rate and that savings are being accumulated in various sectors of the economy relative to not only consumer goods but also intermediate goods. Private consumption has not shown any particular shift, and that has contributed to a certain extent to the expansionist nature of budget policy.

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While domestic consumption has grown, Italy's export markets appear to be in quite a different position, and this should also be considered. The sharp drop noted in the past year seems to have been caused by both weakness in world demand and a slump in competitiveness.

The few figures available concerning demand in the early months of 1981 lead us to believe that spending for investment goods is being maintained, particularly for plant and machinery. Construction also seems to be showing some signs of life yet because of demand for construction materials in that sector.

Private consumption remains stuck at levels reached at the end of 1980, although the demand for durable goods is beginning to show signs of weakening.

Economic Policy

Between October 1980 and March 1981, the state budget deficit virtually exploded. Some forecasts show an overall deficit of 14 trillion lire between January and April 1981. Part of this deficit increase is attributable to the long delay in publishing the final version of the state budget for 1980; it came out in October 1980. It is also attributable to the new rule requiring transfer payments be made at the beginning of each trimester to the regions and local government entities. But there are no serious reasons to think that the situation will change spontaneously in the second half of this year. All this has affected the economy by sustaining domestic demand and by creating new financing that has made it harder to control liquidity.

Monetary policy, however, has basically come back to the route taken in 1973, thanks to measures taken between the end of last year and the beginning of this year, as concerns bank credit controls. All the various components of bank capital are now controlled; holdings and placements in both lire and gold are verified monthly. This now requires a different approach to controlling the money and credit supply. Also, monetary authorities have tried to anticipate expectations in recent months by announcing provisions that would have gone into effect only later. This is the case with the renewal of credit limitations announced in June 1980 and applied in September. This monetary policy message could have been beneficial to controlling credit had it not been often contradicted by other government pronouncements, which sapped its credibility in the eyes of economic managers.

That is how the last two measures were arrived at early in 1981, namely the increase of 2 1/2 points in the discount rate and the increase in the mandatory reserve coefficient, which accompanied the revision of the lira's parity relative to the EMS [European Monetary System]. Tight money was thus maintained by a policy of high rates, which the banking sector will probably respond to by a high rate of disintermediation of its bank deposits, already begun last year, and by reducing bank purchases of public bonds. This reduction in bond holdings also appears to be a first step toward the divorce between the Bank of Italy and the treasury in public debt management policy, which has been announced by various sources.

Outlook

The situation that has been sketched out is characterized by a depressed international economy, a slowdown in domestic activity and high rates of price increases. The outlook is hard for society to accept: no or very restricted growth in incomes in the next 2 years and domestic demand stagnant at very low levels. Inflation seems doomed

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to stay at high levels. Monetary and credit policy, like tax policy, seems intended to be more restrictive in 1981, presumably to restrict domestic demand relative to foreign demand and thus avoid excessive weakening of exchange rates. In this context it should be remembered that brokers are still hoping for a correction in the exchange rate, which has always happened in the past, and that the policy of ever higher interest rates is seen in that light.

The Treasury-Bank of Italy Divorce

One of the most important points touched on in the discussion was an evaluation of the so-called divorce between the treasury and the Bank of Italy in managing the public debt. It has been announced several times by central monetary authorities, but it is not yet clear how and when it will take place. It is very clear though that this divorce does not mean that the Bank of Italy will cease to absorb bonds not bought on the open market. It means only an improvement in the instruments for reaching greater stability in creating the monetary base, which has been made difficult by the treasury's erratic deficit in the course of the year.

The first hypothesis possible on carrying out the divorce seems to be an action planned by the Bank of Italy, which decides and checks monthly on how much to put into the market, whether for the general requirements of the economy or for budget deficit needs. The Bank of Italy can thus avoid a heavy deficit build-up in any single month. At the same time, provisions for increasing public expenditures would have more visible effect on the market; these effects are not always clear to those who decide or vote on them. This has the obvious result of increasing the variability of treasury note rates. An attempt to attenuate this effect would have to involve increasing the various bond maturity rates, especially to less than 3 months, in order to meet unexpected expenses. They could even be issued at 15-day intervals. Deficits could also be covered temporarily by using public entities' bank deposits, which come to about 20 trillion lire (the finance law recently passed already provides that these funds return to the treasury at the rate of 5 trillion lire in 3 years).

Some confusion arises, however, when it comes to evaluating this series of proposals when one considers the specialization of the Italian money market. The increased variability of treasury bill rates might discourage some of the newer money brokers who have begun only recently to invest directly in the market, and, in addition, the persistent high rate of inflation might halt completely the consolidation of longer-term bond debt. Even though there are plans to issue inflation-indexed long-term bonds, it is not yet clear how this might take place or how this indexation might be applied. The terms of the divorce will therefore have to be arrived at very gradually and painfully to give brokers the time to adjust to the new situation.

It is also important to note that carrying out this project would involve a change in the policy that the Bank of Italy has been following. Indeed, it would mean giving priority to control of the money supply over total domestic credit and interest rate stability. Too many factors have caused failure in the various provisions for liquidity supply and maximum bank credit; now these controls are being

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extended to credit in both lire and foreign currencies, which prevents any competition between credit agencies and makes the bank credit market increasingly rigid.

Budget Policy

Another point that has caused talk among all politicians and economists in recent weeks is settling 1981 government budget policy. Government and parliament have been discussing for weeks on end new spending decisions to be inserted in the budget and budget modifications, but they have not succeeded in evaluating the effects in terms of increased budget deficits and the lack of income to cover these deficits. That is why it has become necessary to set as a first article of the budget rather than as a last article as is now done the maximum limits on borrowing from the money market, which may not necessarily coincide with the deficit forecast, and afterwards deciding on budget policy and the margins available for further parliamentary action. In addition, the recent parliamentary debate on putting wage indexation on a quarterly basis for pensioners has brought out the necessity for activating the law 468 rule, which has never been applied to standing current expenses, such as the latest provisions concerning pensions and also the reduction in family allocations and putting wage indexation on a trimesterly basis for civil servants, as voted last year. This rule requires that every major standing expense be allocated a specific income source to cover the major part of the expense. Only the rigorous and decisive application of these two instruments can keep the budget upset that happened this year from repeating itself in years to come.

Before entering into a real discussion of government budget and tax policy proposals, it is necessary to evaluate what is special about the present public budget situation, in light of the experience of the 1970's. In the past decade, two opposing tendencies came together: the centralization of tax collections through tax law reform and the simultaneous decentralization of expenditures through the creation and establishment of regional institutions.

This is now causing gigantic problems in controlling outlays to peripheral entities, whose financial situation is not well known, especially because of deficiencies in the information and accounting structures in public finance ministries. Some tax collecting decentralization might theoretically be allowed, though more on a regional than communal basis, with the regions' having autonomous decision-making powers in large sectors of public expenditures such as health. The government could then reduce the rate of growth provided for in transfer payments to these territorial units by guaranteeing a certain level of service to be granted the community but leaving it up to the regions to improve the service by increasing their own local taxes.

An initial control on the rate of public expenditures would thus be created at the territorial level, especially because increased local taxation would be carried out under very watchful eyes and, at the same time, the local governments would stop putting constant pressure on the central administration to get more funding with no possibility of controls, with the result that the money often wound up deposited in banks.

Many other proposals have been advanced for rationalizing public spending; among them are a policy law on public employment and the spacing of tax payments throughout the year to reduce large budget deficit oscillations. But attention has been fixed largely on the present economic situation and on discussions of spending cuts.

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It is not yet clear whether the government wants to restrict demand, which would call for large cuts in current expenses, or whether the problem is essentially a monetary one, that is, whether the deficit will have to be reduced to limit economic liquidity. In the latter case, cuts would have to be made in grants from the state to outlying governmental units.

It is no simple matter, then, to give a definite, unequivocal opinion on the present state of budget policy. All that is sure is that it is now urgent to respond to two necessities. The first is to lay the groundwork for structural measures that will have long-term effects in concert with steps that have already been taken to organize and control public spending. The other necessity is more immediate: to use budget policy as an instrument of short-term economic policy; however, it seems to be the more difficult solution, because, as we have pointed out, there is no room for any of the major voices for spending to be consistently provided for; making small cuts here and there is certainly not adequate at serious moments like the present, and it also involves the risk of worsening the quality of health care service.

Something else that has to be gotten rid of is the continual announcements from the government of measures that are possible but never get enacted. Experience has shown that this behavior only feeds inflationary psychology among financiers, with all the consequences that flow from it.

Inflation

One of the major problems that has beset the Italian economic system for years is the continued high rate of inflation. Forecasts for 1981 show no improvement (up 19.5 percent) and, considering the increases noted in the first months of the year, the forecasts may be considered optimistic. The situation does not seem likely to improve any in coming years. Even supposing that oil price increases are moderate, the rate of inflation in 1982 should be near that of 1981 for purposes of contract renewal negotiations. Various positions have emerged in the course of discussions concerning factors that have fueled inflation in recent months, and various proposals have been set forth to block a new rise in inflation. In any case, there is agreement on adopting urgent measures to reduce price increases drastically and quickly, because gradualism is rapidly going bankrupt. It appears necessary, then, to achieve a truce period in which businesses will pledge to restrain their pricing policies and a temporary revision of wage indexation can be made so that structural changes can be accomplished once the present situation is dealt with.

Examining the various hypotheses shows three causes of inflation (which probably interact with one another): costs, demand and expectations. If we suppose that the main cause is excessive increases in production costs, economic policy should be aimed at containing them tightly by acting mainly on indexation mechanisms. If the rate of price increases is reduced at the same time, no real income should be lost, and the improved competitiveness thus obtained would help exports recover. Assuming there is no immediate reduction in the rate of inflation, measures should be introduced that would contain domestic demand and prevent profiteering. On the other hand, there will be choice of two directions to follow if it is thought that the causes of inflation may lead to a high level of demand (and therefore implicitly to a growth in profits). On one hand, a more restrictive monetary policy would be activated; on the other, tax policy would have to be harshened by increasing direct taxes. In fact, the opinion shared by a majority of the participants is that there should be no increase in indirect taxes in light of their effects on prices, nor should there be an increase in fees that is not supported by a well defined policy.

As regards expectations, particular reference is made to the effects that the authorities' declarations have had in past months. In this respect, it may be emphasized that the continual revision of rates did have an inflationary effect in 1980, which makes it evident that it is necessary to achieve a more credible formulation of economic policy. It is felt that equalizations, while necessary, should be set for a fixed term in order to create a climate of certainty to work in.

One possible solution might be, assuming a truce between businesses during which each would try to reduce pressure on prices, that the government would contribute to it through a serious price policy on goods produced by units in the public sector that participate in and affect wage indexation calculations. There could be a rate policy that would realign rate levels upward initially then hold them steady for a fixed term, thus avoiding episodes of confusion, as happened with the last telephone rate increase.

There would be less rate pressure on wage indexation and, therefore, on the cost of labor and especially cost containment in the public sector, which is now having all its major current expenses indexed. Considering how large they have become, reducing them might more than compensate for most of the payments necessary to limit the deficits of various governmental units caused by temporary rate freezes.

Conclusions

The discussion of economic policy proposals brought out substantial unanimity among the panelists on the priority and necessity of bringing inflation down to levels lower than present ones, more in line with those of other European countries.

The danger in the present situation consists not only of the high rate of inflation but also of the risk inherent in its instability, as well as the risk that it might explode. Any domestic or international event that unleashed any price level, given widespread, intense inflationary psychology, would be amplified in its ripple effects and make it more difficult to control the lira's exchange rate.

However, differences of opinion appeared among the participants when it came to stating whether direct intervention on production cost and pricing dynamics, particularly the cost of labor, should be accompanied by a more or less rigid limitation of domestic demand. Limitation of domestic demand requires maintaining and perhaps strengthening present restrictive policies, particularly credit policy.

Those supporting this line of action recall how, in the past (1964, 1974, 1976), only clear and decisive intervention by monetary authorities was able to reshape significantly the inflationary process that was under way. However, those opposing it say that the benefits were only transitory because experience has shown that increased productivity follows increased production; and, since productive structures are essentially fixed, the slowdown in production is causing sharp labor cost increases per unit product, which are bound to show up in price increases, although the increases will be spaced out over successive periods of time.

Thus, if limiting domestic demand is to be effective, it will have to be relevant and extended in time, with easily imaginable effects.

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Proposals along the other line of economic policy hold that it is necessary to intervene directly in setting costs and prices. It is therefore opportune to see what might come of the unions' demonstrated willingness to negotiate with Confindustria [General Confederation of Italian Industry] and the government over wage and salary restraint.

Any agreement should be accompanied by other measures. In the first place, there should be a less active rate-setting policy; then, as concerns business, there should be a revaluation of tax-exempt property (Visentini 2), and, finally, as concerns the unions, a revision of IRPEF [family income tax] rates.

In this context, Mario Baldassarri put forth a proposal that makes Ezio Tarantelli's plan more effective: put a conventional ceiling at points on the wage indexation scale, but the points should be considered less taxes and company contributions for both workers and businesses. Thus, two effects: (1) the workers' risk of losing real income would be lessened; (2) business would find it more convenient not to break through the ceiling by raising prices, since in that case they would have to pay both in uninflated indexation points and all social costs.

The result is a notable reduction in costs through improving business competitiveness and making the exchange rate more credible, with a consequent calming effect. The cost to the government of a 20-point untaxed ceiling is 2.6 trillion lire a year: 1,800 lire for 130 points (10 for the month in the middle of the year) for 12 million workers. But a part of this cost would be saved by a drop in the interest on the public debt and in government expenses.

In any case, the illusion would be avoided that an agreement on wage indexation would mean an immediate and significant drop in inflation.

Recent cost increases have not yet been passed on in prices. It should not be forgotten that the lira suffered a 35 percent devaluation relative to the dollar in 7 months. However, even the modest results that may follow in a relatively short period of time are very significant, because they would strengthen the slowing of inflation and, especially, help defuse inflationary psychology and keep prices down.

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POLITICAL

SPAIN

TEJERO INTERVIEWED IN PRISON BY FRG JOURNALIST

Hamburg STERN in German 27 May 81 pp 31-32

[Article by Erik M. Rickert: "Today We Need Men Like Hitler and Franco"]

[Text] "Impossible," say the Spanish colleagues: "Nobody can visit Tejero. Certainly not a foreigner." Three months after the attempted coup Antonio Tejero Molina, lieutenant colonel in the Guardia Civil and leader of the attack on parliament in Madrid, is still the topic of the day at Spanish bar counters. How does one get to see an arrested military man, who is the Devil to some and a national hero to others? The tip reads: "Cafe Roma." That is where, camouflaged under the discreet charm of the bourgeoisie, the reactionary society of the capital city meets: Aristocrats, retired military and clergy.

It is the hour of the aperitif. "Viva Tejero," says a dyed blond laden with jewelry, toasting me. "Baron ahem," I mumble, suggesting a bow and a clicking of my heels. The barkeeper stares for several seconds at my neat hair parting on the right side and then says in German: "Heil Hitler." I wince and glance around the bar furtively. The luminaries of the society smile at me and raise their glasses in encouragement.

I must eat, drink and converse with Countess de Falco, with Lieutenant General Ibanez, retired, and with the Very Reverend Don Rafael. And I must drink again and again: To Franco, to Hitler, to Tejero.

His supporters, as the old general revealed to me with a wink of the eye, even charter jets and fly with family and friends to El Ferrol on the Atlantic coast, where the new hero of the Right is detained in the fort of that city where Franco was born. "Nonsense," the editor of the reactionary newspaper HERALDO had replied: "The military authorities are slowly shutting that off. Now only his family and closest friends can go to visit Tejero." Privately the editor says: "Come to the Roma tomorrow night between midnight and one o'clock. I might be able to help you."

The next evening I put on something dark and formal and at the witching hour I am standing at the Roma bar. Later the editor of the HERALDO appears and after the second whiskey he engages me in a conversation about my family. It seems that one of Hitler's generals had the same name.

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The entire time a man is standing within earshot of us, an erect man in his mid-fifties, dressed in a dark blue suit. Now and then he surveys me over the edge of his glass. Suddenly he writes something in his notebook, tears a page out, lays it on the bar and goes. "An ex-general of the Spanish Legion," says the barkeep reverentially. "An important man from the War Ministry. Put the note in your pocket."

The note reads: "Dear Antonio, the bearer is a German, who has come to Spain especially to shake your hand. I do not know him personally, but you can trust him. The signature is illegible. Quintar or something like that.

I fly to La Coruna, and from there I drive to El Ferrol. The fort Castillo de la Palma is on military territory. The soldiers greet me amicably, feeling flattered by every pilgrim to Tejero.

All of a sudden I am surrounded by uniforms and machine guns. Bodily search: Minicameras and pocket recorders end up on the desk. I reach for the note in my shirt pocket. "This must go directly to Tejero. Under orders from General Quintar." Five minutes later I am standing before the most controversial man in Spain.

Tejero's cell is a comfortably furnished office with a view of the sea. The lieutenant colonel is wearing a freshly ironed uniform of the Guardia Civil and is in the best of moods. He is drinking cognac with two married couples of his own age and he offers me a seat. Piled on a smoking table are mountains of mail, including large-size congratulatory telegrams.

"So you are the German patriot?" He is on intimate terms with the "sympathizer."

"Yes, who would like to shake the hand of a Spanish patriot."

Tejero turns to his guests: "Look at that! The first foreigner to visit Tejero. They are already coming from Germany to see me." Then to me: "Do you in Germany consider the Right to be bad Germans?"

"It was different 40 years ago," I dodge, obviously touching his favority subject.

"That," says Tejero, "is what we need today: Men like Hitler and Franco."

"Do you really believe that Hitler or Franco would have the same success today?"

Tejero leans forward and looks at me sternly: "Much more than people think, very much more. Except that everything that is witten about these men is a tendentious smear campaign."

"Do many here think the way you do?"

Tejero extends his arms, as if he wanted to take in all of Spain, or at least the military garrison: "All," he says emphatically.

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This man believes every word that he says, honestly, courageously and fanatically: a hero for the Right, but no leader. He needs at least one other whom he can obey.

Carefully I try to turn the conversation to the attempted coup of 23 February: "What did you really feel when you stood next to the butcher of Paracuellos de Jarama with a pistol in your hand?" That is how the Spanish Right contemptuously calls the communist leader Carillo.

"Nothing," says Tejero, "I am no butcher, and I would never sink to the level of this person. I had another mission." Then he becomes taciturn.

"When," I risk further probing, "will it be time for Carillo?" It is the veiled question concerning the next coup.

Tejero's face darkens. Now he looks exactly as he did when I saw him in photographs of the attempted coup. "Soon," says the lieutenant colonel, "and then I will be released."

Before leaving I ask for his autograph, but I have no paper with me. He writes his name in the margin of "ABC," that newspaper in which he published his justification. Two sentries pick me up and take me to the gate. The fort, that much is clear to me, is no prison, but a citadel of refuge and defiance for an important strategist, who is being kept in reserve for his next assignment.

Tejero seems to be the only one in the fort who can do as he likes, who is unconditionally obeyed. I wonder why Tejero does not simply get up and leave. No one would dare stop him.

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MILITARY

ITALY

CONTRACT ON SALE OF WARSHIPS TO IRAQ SIGNED

Milan PANORAMA in Italian 1 Jun 81 pp 84-89

[Article by Alvaro Ranzoni: "And the Rest Is a Tip"]

[Text] The bribe amounts to 130 billion lire. The one who will put it in his pocket is Michel Merhej, the owner of the Al Talal business firm whose main offices are in Damascus, the capital of Syria. That is the commission, running to approximately 5 percent, which two Italian state enterprises, the Cantieri Navali Riuniti and Oto Melara, are prepared to pay for the contract to provide naval vessels which has just been concluded with the government of Iraq: 11 warships, ammunition and the training of crews for a total of more than 2,700 billion lire.

Bribes of from 4 to 15 percent are common practice in deals of this sort. Everybody knows that it is difficult to conclude a contract to provide goods or services in the Third World without paying influential intermediaries or corrupt functionaries.

In Saudi Arabia, the intervention of a middleman is absolutely required by law. No one sells a pin unless he is presented at court or introduced to the appropriate minister by an intermediary who is trusted by the Saudis and has a right to a regular commission.

Other countries, particularly in Black Africa, are more uninhibited. There it is the family of the reigning sovereign or dictator whose palm must necessarily be greased with substantial gifts or cash in currencies held in high esteem and paid into banks in Switzerland or London.

But there are countries and countries. Iraq is, or ought to be, different. An authoritarian regime, inspired by Ba'athism--a puritanical and rigorous Arab socialism--should exclude cases of financial corruption on principle. And then this contract with Italy (4 guided-missile frigates of the 2,400-ton Lupo class, 6,650-ton corvettes, 4 of which carry guided missiles and 2 carry helicopters, plus an 8,700-ton supply ship) was desired by President Saddam Hussein personally and requested of the Rome government by the government in Bagdad.

Then why did bribes need to be paid? This time there is not even the question of competition. In fact, the Italian ships of this type are the best suited to the needs of the Iraqi navy. Furthermore, in contrast with what sometimes happens with other Western or Eastern countries supplying the Third World with weapons, the Iraqis do not need to fear that the Italians will postulate any political stipulations.

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Now, if ever, Italy could have been involved in a political problem, since it had tried, up to now, to remain neutral between Iraq and Iran, where the war which now has been going on between them for more than 8 months is concerned. But this contract was initiated in 1977, when no one was thinking of a war, and the ships will not be delivered before 3 more years have passed, and it is hoped that the war will be over by that time. In short, while it is easy to assert that Italy is taking sides with one of the combatants by supplying these ships, it is also true that the Italian ships will not have any influence on the outcome of the conflict.

Moreover, Italy traditionally also supplies Iran with armaments and could conclude similar contracts with the Khomeyni regime if Tehran were in a position to pay or to provide oil, as Iraq, on the other hand, is continuing to do.

Thus it is that the people governing Italy, and particularly the minister of foreign trade, Enrico Manca, and the minister of state participations, Gianni De Michelis, both of whom are Socialists, warmly supported the contract, while the minister of foreign affairs, Emilio Colombo, who is a Christian Democrat, had no objections to offer.

This was a politically acceptable and economically convenient deal which was concluded out in the open between two governments, the state war industry of one of which is directly involved. So what need was there for private intermediaries?

At least to the extent that we are not dealing with the usual thing of "bribes at home"--that is, money which ends up, wholly or in part, not in the pockets of personages with exotic names but in the very Italian coffers of parties or political movements or in the pockets of generals or admirals! The latter participated personally in the negotiations with the Iraqis, but they did so, they say, to promote the Italian war industry and in that way to contribute indirectly to the technological modernization of our fleet. Certainly not for the sake of bribes!

In the long history of the contract with Iraq, the chapter concerning bribes opened up at once, in 1977, when the naval shipyards of Breda entrusted Michel Merhej with the promotional task of obtaining an order for corvettes from Bagdad. The anticipated compensation was 4 percent.

In that same year, the Cantieri Navali Riuniti also began to think of supplying Iraq with frigates of the Lupo class, and they designated another mediator, a man named Nadami S. Hauchi, who, it appears, was pointed out by the ENI [National Hydrocarbons Agency] representative in Bagdad. The anticipated compensation was also 4 percent.

But in October 1979, after the negotiating process had been integrated and the responsibility had been entirely assumed by the Cantieri Navali Riuniti, the mediator was only one man again--Merhej--who was supposed to take care of everything: the 11 ships (3 percent in payments to be made to the Al Talal company and 1 percent to Overseas Shoe of Monrovia, designated by Mr Merhej), logistical support (the office, a dry dock and spare parts) and the contract with Oto Melara for the ammunition (of a value of \$800 million).

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However, the other mediator, Mr Nadami, was not disappointed, and this is one of the more inexplicable chapters in the history. Even though his promotional contract had expired on 31 December 1979, he obtained, in the same way, a contractual compensation of \$23 million, \$4 million of which were debited to Oto Melara, to be paid to a Luxembourg company, the Dowell Corporation, and all this without his having sold even a rowboat or a cartridge.

At that time, there was another minister of foreign trade, Gaetano Stamatì, who did not raise any objections when the details of the operation were recounted to him at a meeting which took place on 15 February 1980 in the presence of high-ranking functionaries from his ministry and the Ministry of Foreign Affairs, as well as managers of the businesses concerned.

A new minister came into office and the contract with Iraq, including bribes, became the responsibility of Stamatì's successor, Enrico Manca, and it was the Socialist minister himself who informed his colleague, Emilio Colombo, on 9 February 1981, that, "to acquire this job the businesses concerned had stated that they had had to avail themselves of the services of nonresident, foreign intermediaries in return for 5.5 percent of the value of the ships and 3 percent of the value of the ammunition."

On that same occasion, Manca mentioned to Colombo that, at an unofficial meeting of ministers with Francesco Cossiga, who was the president of the Council of State at that time, "we decided that we would not agree that commissions should be paid for the supplying of these ships and ammunition" (Editor's Note: This was the day after the ENI-Saudi Arabian scandal, and nobody wanted to get involved in anything having to do with bribes at that time). Manca adds: "Personally, I would have been inclined to remain firm on that decision, but before deciding anything definite in that regard I would have liked to have had the encouragement of his concurring opinion, taking into account the delicate implications which, not only on the specific operation in question but also where future relations are concerned, might bring about either denials or authorizations which were not supported by adequate consideration of the various interests involved."

Colombo pondered and replied: "This is a problem which has aspects that go beyond the specific trade deals and are concerned with the behavior of our agents who are called upon to compete with similar foreign practices. Therefore it seems proper to me, even where these more general aspects are concerned, to go back to discussing them in our regular sessions." Not even Colombo is explicit. The meaning which is derived from the correspondence between the two ministries is dual in nature: 1) Cossiga's opposition is set aside, and 2) authorization is granted under the responsibility of all the political components of the government.

As PANORAMA understands it, the situation is as follows with regard to this question: bribes have been approved. Whether or not they would be necessary to bring the contract with Iraq to a successful conclusion remains to be seen. In the next few days, the Iraqi minister of foreign affairs, Sadun Hammadi, will arrive in Rome to ask for more armaments, among other things. It appears that he will not be accompanied by any intermediaries. Will at least Mr Hammadi have noticed that a mediator is not indispensable, as seems to be the case as far as we Italians are concerned?

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GENERAL

FRANCE

'NEW INDUSTRY' SEEN BEING PUT IN ORBIT BY ARIANE

Paris PARADOXES in French Winter 80 No 42-43 pp 51-59

[Article by Jacques Houbart]

[Text] There is no mystery about the nature of the fiasco of Ariane's second launch, on 23 May 1980. An instability in the high-frequency combustion, which lasted three-tenths of a second, suddenly modified the characteristics of the injector in one of the rocket's first-stage engines. That mishap destroyed the engine, and then a fire that resulted in the destruction of the launch vehicle 108 seconds after take-off. This incident is typical in a new precision industry in which people like the space engineers must try to reduce "tolerances" and chance to an absolute minimum.

The failure of the fuel injection system in the combustion chamber of one of Ariane's engines was the result of slight variations in manufacture between the otherwise identical parts. It must be emphasized that this variation affected geometric characteristics the sensitivity of which had not been observed in the course of numerous engine development tests (close to 200).

So it has been decided to alter the tolerances for the manufacture of the injectors--this kind of component contains close to 1,000 injection openings and is supposed to supply fuel at the rate of close to 250 kg per second--and to proceed to go over them carefully on the engine test bench. This program alteration should make it possible to launch Ariane L03 under good technical conditions in the spring of 1981. The correction of the defect thus serves to underline the role of mathematical calculation and the assistance of the computer used by the specialists with SEP [European Propellant Company], ONERA [National Office for Aerospace Studies and Research], SNIAS [National Industrial Aerospace Co or Aerospatiale] and CNES [National Center for Space Studies]. An extensive and detailed task has been carried to a successful conclusion, starting with the processing of the telemetric data and the analysis of the damaged parts recovered from the sea as well as of the data gathered on the engine test bench and through accoustical simulations.

This long labor of investigation and correlation resulted in the identification of the aberrant readings from among some 30 groups of parameters monitored on each injector.

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A Data Matrix

Indeed, if the computer research has been successful, it is because since the beginning, the development of the Ariane rocket was carried out within a veritable data matrix. It must not be forgotten, in fact, that the agreement of 31 July 1979 on the new European rocket program came after the failure of the Europa rocket because of the lack of tight organization in the effort to fit together the often incompatible elements of an international puzzle.

It was going to be different with Ariane. France took over close to two-thirds of the program and assumed overall control of production. This was to make it possible to do away with any ambiguity about responsibilities, and to impose strict management methods bolstered by computerization. Uniform specifications, sector by sector, were imposed on everyone, and the division of labor into its component factors was handled with strictly defined boundaries.

Costs and deadlines were established for every contractor, and the principle of progress reports was formalized. In a vast planning PERT [expansion unknown], covering tens of thousands of events, every contractor had to put together at pre-established deadlines the information necessary to coordinate the operations. The planning administration was entrusted to the CNES project team, assisted by the computer experts of Aerospatiale.

A New Generation

With Ariane, we have the appearance of a new generation of launch vehicles which owe a great deal to the reliability of mathematical calculation. Twenty years ago, things were done step by step, and experimentation reigned supreme. There would have been no question about launching a three-stage rocket right away in its almost final version, as was the case in December 1979 for Ariane. But today we have powerful logical and material means-- from the experience of other vanguard industries, such as the nuclear industry, which advanced the processes for structural calculations. A veritable wall has been crossed in the field of simulation.

The pogo effect, for example, linked to the variations in vibration with consumption of propellants was discovered by computer analysis during the development of the Diamond rocket, and a corrective device was developed for Ariane. Navigation simulation, moreover, has been virtually perfected, and the mathematical model shows literally everything. This was inconceivable 20 years ago.

Computerization of the program is all the more vital because it takes 4 years to prepare a rocket. The launching of the rocket takes place before various modifications have been made (after experimentation), so one must gamble on the trustworthiness of the computer results and "feedback."

Competition in Space

From the beginning, the space age was considered part of the rivalry between the Russians and the Americans, who decided to avenge Sputnik. Today, the young European space industry must meet real commercial competition. Participants in the Ariane program have not forgotten, for example, that several years ago the launching of the Franco-German satellite "Symphonie" was burdened by the Americans with conditions that prohibited any possible commercialization.

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Despite the American lead in the space field, the present situation is rather good for Ariane. In fact, the Americans have abandoned expendable launcher technology in order to perfect a shuttle which has given them a great deal of anxiety in the last 2 years. That decision resulted from their intention to resume--like the Russians, and perhaps for military reasons--the manned flights that were abandoned after the last Apollo missions.

"This is not the ambition of the Europeans," we were told by Jean-Claude Bouillot, head of the Future Projects division of CNES. "At least not in this decade. The European launch vehicle has been optimized for applications, and particularly for those that will involve the placing of satellites in geostationary orbits. With its improved versions, No 3 and No 4, the European launch vehicle will soon be able to substantially reduce the cost per kilogram in orbit."

The Market and the Cost

The world market for launchings is beginning to be discernible, at least for the next few years: prospects include both the needs of various developing countries (telecommunications, television) that for cost reasons prefer space equipment to building a land-based network from scratch, and the needs of industrial countries, which are not content merely to improve the performance of their present equipment but are making new demands (telematics, meteorology, land remote sensing).

With respect to the creation of factories in space (for making certain substances or electronic components in vacuum conditions, for example), it is possible that progress in automation will not be sufficient, and that we will have to resort to manned flights. CNES researchers are also working on that contingency. But competition is not just awaiting us on that far-off battlement: it is also in the price per launch offered by Ariane and the American shuttle.

Now "the most curious aspect of this competition," Jean-Claude Bouillot stresses, "is that no one knows what the price will actually be, neither the customers nor the supplier. Certainly, NASA announced the rates it will charge during the first 3 years, but those are highly promotional and will be applicable--given the increased pace of flights--only to a small number of customers, most of whom are dependent on the U.S. administration. For subsequent flights, NASA has let it be known that it would adjust the price based on the results of the first 3 years, and we can only guess. The world satellite telecommunications organization INTELSAT estimates that the rates will be at least 50 percent above the announced prices. With respect to Ariane, it is easier to establish the net cost, but the sale price should also take into account fixed costs and the market situation."

We are presently reaching the limits of chemical propulsion, and it is illusory to imagine that we are going to make space flights just like airplane flights. Initially, NASA planned 60 shuttle missions per year, but it is possible to conclude that the system can only become profitable at a rate of 150-200 flights per year, which is too many.

One thing is sure, which is that in the medium term the shuttle is not going to make conventional launch vehicles obsolete, just as the turbojet did not eliminate the propeller.

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Absolute Reliability

There is no way to provide maintenance for a rocket or a satellite. So the chances of a breakdown must be reduced as much as possible, and must be guaranteed. Thus, the space industry requires the industries concerned to submit to a severe discipline that obliges the engineers to surpass themselves. For the participants in a project like Ariane, it is probably above all a question of prestige: indeed, it is less a question of a calling card than of participating in a vast "qualification" effort. As Mr Hatem, head of the Space Division at Souriau's told us, "an Ariane rocket represents only about one-four-thousandth of our turnover, but for a manufacturer of connectors, it is vital to participate in a program where connectors are equally vital."

Souriau has undertaken major research in the creation of materials intended for contracts, and insulators--the two main elements determining the quality of a connecting device. Constraints of precision in the industry are such that "in the Space Division of the enterprise there are as many personnel involved in monitoring and testing connection systems as personnel involved in manufacturing per se. One might therefore say that quality control is a part of the product the customer is buying. Moreover," Mr Hatem adds, "in order to satisfy its own need for quality control, Souriau has developed various pieces of service equipment that can be furnished to customers. Then they too will have means of verification similar to those of the maker. Continuity of monitoring methods is certainly not a negligible factor in the maintenance of a product's quality right up to the time it is put in service."

Lacework

When heavy industry works with lace, nothing should be left to chance. In the Ariane program, Air Liquide, for example did not content itself just to remain a maker and distributor of industrial gases; that enterprise got to work researching, developing, and producing (at Sassenage) the metallic structures of the cryogenic third stage of the rocket, a structure basically composed of twin reservoirs of liquid hydrogen and liquid oxygen.

It is a fairly hefty stage--height 8.5 meters and diameter 2.6--representing a mass greater than one ton for more than 8 tons of propellants. All of these structures support a uniformly distributed thrust of 50 tons, which is needed to put the satellite in orbit. Now the thickness of the reservoir must be no greater than 1.5 mm! That is to say that very sophisticated tests of the construction materials had to be carried out, and the technology of thermal insulation for the reservoirs, which successfully withstood the difficult conditions of the launch, had to be developed to an advanced level. Air Liquide has also manufactured containers destined for the transport of liquid hydrogen at a temperature of -253 C from France to the launching site in Guyana. These cryogenic containers are voluminous (40,000 liters) and notable for the quality of their thermal insulation. This reduces evaporation losses to a minimum, despite unfavorable atmospheric conditions. The containers were taken by road from the Air Liquide factory at Fraix Marais to Havre, then via ship "over the bridge" and by road from Cayenne to the Kourou launching site.

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The ATHENA Policy

A space program like Ariane does not operate all by itself in the ghetto of vanguard activities. Directly or indirectly it plays a dynamic role throughout industry. Aware of the dimensions of such an impact, Aerospatiale is carrying out a policy of market exploitation which it has adorned with an acronym--"ATHENA"--which stands for "applications of outer space technology for new buyers."

As a part of this policy, various kinetic wheels have been developed (on magnetic landings for the accumulation of energy) and a photovoltaic program (conversion of solar energy of electricity). But these side-effects of rocket research illustrate quite clearly the evolution of the precision industry toward ever more integrated computerization.

The appearance of new technologies in rapidly-changing industries poses the question of safety in a more forceful way. Now the results of the studies made on the safety of ballistic engine systems can be applied in various sectors of activity, as described by Didier G. Compard (Aerospatiale Corp.-Les Mureaux) last April in Strasbourg in the colloquium on "Economic Effects of Space Technology."

"The development of the concept of the "overall failure profile," he said, led Aerospatiale to develop two pieces of computer software. One of them carries out a qualitative analysis of a failure profile. It supplies a list of combinations of events that would be sufficient to cause an accident ("minimal cut sets") and a table of frequencies of the events (a priori, the most significant events). The other carries out a quantitative analysis of a failure profile. It calculates the probability of occurrence of all "minimal cut sets" and "feared events."

For Any Contingency

Whatever may be the feared event--explosion, pollution, radiation, fire--a specially adapted safety program can be designed and implemented. Fields as varied as chemistry, off-shore oil, specialized medical equipment, or transport could resort to this methodology and use the existing software. As for Aerospatiale's considerable testing capabilities, they are also available for industrials that want to verify or prove the efficacy of their safety systems.

Aerospatiale's expertise in the field of operational monitoring of launch vehicles, which makes possible a real-time verification of hundreds of parameters, has also had an unexpected side-effect: development of the medical monitoring systems called SYSCOMORAM, carried out by doctors with the help of DGRST [General Delegation for Scientific and Technical Research]. These systems make it possible to perform, practically in real-time, specialized examinations (hemodynamic, respiration mechanics neurology). More than a dozen systems of this nature have been sold in France. SYSCOMORAM, according to doctors who use it, has meant an incontestable leap forward in functional exploration. When one has such instruments, it would truly have been disappointing if the failure of the second Ariane launching could not have been explained.

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Ariane: Dangerous Frequencies

The nature of the failure of the second test flight of the Ariane rocket has been clearly established, thanks to a laborious scrutiny of telemetric data and a series of tests carried out at Vernon on the firing ground of the SEP. We must abandon the idea of any external cause: it was an intrinsic problem in the engine. In effect, it turned out that some specimens of the propellant injection devices in the combustion chamber did not have a sufficient margin of stability. So a phenomenon of rapid oscillation of the combustion pressure in the chamber occurred.

This phenomenon, called "high-frequency combustion instability," has been encountered in most liquid-propellant rocket engine programs, including "Diamond," the F-1 of the U.S. "Saturn" rocket, and an engine on the lunar LEM. It was therefore decided to perfect some modified injectors, and much more stringent criteria for acceptance or rejection, associated with a sequence of acceptance launching, has been perfected.

The launching of the L-03 may take place in the second half of June, under these conditions. This delay will not cause any slippage in the operational launchings already scheduled.

The Four Benefits

During the April colloquium in Strasbourg, a study which had been ordered by the European Space Agency [ESA] from BETI (the bureau of theoretical and applied economics) at Louis Pasteur University. Limited to an examination of the impact ESA contracts between 1966 and 1977--which amounted to \$1 billion--have had on the companies involved, the BETI study showed the four categories of economic benefits derived from space contracts:

- 1) technological benefit, which includes the creation of new products and diversification into new sectors;
- 2) commercial benefits, which imply growing penetration of markets;
- 3) the "organization and methods" category, which concerns the internal operations of the contractor and takes into account new discoveries, the introduction of new management techniques leading to better productivity in the enterprise; and finally
- 4) the "labor factor," which expresses the value resulting from creation and underwriting of highly qualified design and production teams accustomed to working well together.

After studying the condition of a sample of 77 enterprises that had received 81 percent of the contracts, after evaluating the benefits that could be quantified and extrapolating to all contractors, the authors of the study indicate that \$1 billion in contracts produced more than \$2.7 billion in benefits, leading to a ratio of 2.7 between benefits and contract size. This already considerable result is clearly too conservative, as the authors willingly admit. They only considered, in effect, benefits on which a monetary value could be placed, and no calculation was attempted of the totality of salutary effects of space contracts on other industries and throughout the entire body of society.

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The BETI researchers announce--perhaps a little naively--that these gigantic and not yet quantified effects "will be the subject of another study." The full impact of the development of Ariane, of Spacelab, and of the various scientific or applied satellites, will doubtless elude the telescopes of the team of economists, no matter how powerful the instruments they use. This space mutation, just like the changes in computerization and nuclear development, marks the beginning of a new industrial galaxy in Europe.

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GENERAL

ITALY

LOMBARDY REGION'S FIGHT AGAINST RABIES

Dog Owners' Cooperation Poor

Milan CORRIERE DELLA SERA in Italian 30 May 81 p 29

[Article by Maia Beltrame]

[Text] A few days ago in the province of Cuneo a man was infected by a fox that had rabies. The case raised anew the problem of the spread of the epidemic that for some years has been affecting the northeastern regions of Italy. It seems, however, that the Cuneo case is not to be associated with this phenomenon of infiltration from the east, but is due to a penetration from Haute Savoie.

The alarm has shown once more the difficulty encountered in combatting the phenomenon of rabies in wild animals. Although the fox is one of the animals most responsible for the spread of rabies, not everybody is in accord with the drastic procedure of extermination of this carnivore. In Bulgaria in 1963 about a million foxes were killed without a positive result, because the individuals that escaped the slaughter reproduced faster, precisely because of the great availability of territory due to the extermination.

The fox, an omnivore of the family Canidae, concentrates its activity in the nocturnal hours and ranges over a more or less large area depending on the density of population in relation to the availability of food in a given zone. Being a territorial animal (i.e., one that defends its den and the surrounding territory up to a dozen square kilometers), it bars the entry of other, outside foxes that may be affected with rabies, thus limiting the advance of the epidemic.

In Italy, too, in spite of the elimination of innumerable animals every year, it can be stated that the number of foxes remains stationary and that rabies continues to advance, as shown by the cases in the Valtellina.

"The only positive system," says Dr G.L. Redaelli, of the Institute of Infectious Diseases of the University of Milan, "is that of vaccinating the greater number of animals, especially dogs, cats, and grazing animals, and proceeding if necessary to kill some foxes in case of real overpopulation. The proposals to give a bounty to hunters who participate in this campaign are absurd."

This does seem to be the best solution, since the experiments with oral vaccine carried out in Switzerland, Germany, and Austria have turned out thus far to be

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of doubtful efficacy. To have the effect of immunizing the animal, the vial containing the vaccine must scratch the palate and penetrate into the animal's blood. Besides there being no guarantee of this, it seems that the foxes demonstrate their famous cunning; they do not allow themselves to be attracted by morsels prepared by man.

The course of vaccinating domestic animals and cattle thus seems to be one of the most suitable tools for blocking the advance of rabies. The Lombardy region has acted in this direction and has established the requirement of vaccination of all dogs, and similar action will be taken by Piedmont and Liguria.

In the commune of Milan, according to approximate figures gathered thus far, only 5,000 dogs of the 40,000 on record have been immunized. It is hoped that by the end of June, the date which has been set but will probably be extended, the figures will be more encouraging; to that end the commune is inviting all dog owners to take their animals to centers designated for the purpose for vaccination. The vaccination, done by veterinarians appointed by the commune, is free.

Vaccines are on the market which are variously prepared. The most effective, which lasts for 2 years, is the Lepp vaccine; the HEP and HERA vaccines are milder and must be renewed from year to year. The first mentioned, which is generally used by the commune veterinarians, generally causes some reactions (refusal of food), which in the majority of cases are limited to a couple of days.

Rabies Spread Into Italy

Milan CORRIERE DELLA SERA in Italian 30 May 81 p 29

[Article by Giorgio Gagliardi, director of the Zooprophyllactic Institute of Venezia and Padua]

[Text] Rabies in wild animals, as is well known, has invaded the entire north-eastern and central parts of Europe and is spreading only by passing from fox to fox, although it attacks other animals in its path, both domestic and wild.

This rabies in wild animals, which appeared in Italy in 1977 in Val Aurina, has invaded nearly a fourth of the province of Bolzano. In 1978 the infection spread from Bolzano to the province of Belluno, invading the Valle dell' Ansiei and, across the Italo-Austrian border, to the province of Udine. Bolzano and Belluno have organized a very active campaign to reduce the numbers of foxes, with the capture of one animal for approximately every 4 square kilometers throughout the province and almost twice that intensity of capture in the zones most threatened. The result has been very encouraging, since rabies disappeared in 1979. This is the only case of total elimination of rabies in the wooded territories of all Europe. In the province of Udine the campaign was much less intensive, attaining only 1/5 to 1/10 the level of capture of the other two provinces. Consequently, rabies has continued its advance toward the south, reaching the vicinity of Gemona.

Toward the end of last year rabies of Austrian origin launched a large-scale attack across Resia Pass, invading the Val Venosta very rapidly, and later, via the Stelvio Pass, going down into Lombardy to Sondalo and Tirano. In this zone

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The Battle Year by Year

	<u>Wild Animals Captured</u>	<u>Wild Animals With Rabies</u>
1978: Province of Bolzano	1,842	209
" " Belluno	1,286	26
" " Udine	240	15
1979: Province of Bolzano	1,136	10
" " Belluno	687	14
" " Udine	443	55
1980: Province of Bolzano	1,153	3
" " Belluno	625	-
" " Udine	235	9

a great density of foxes has been observed, so that a rapid spread of the infection is to be expected unless an intensive campaign is launched against these animals. Passing from the Val Venosta into northeastern Lombardy, rabies has reached Stelvio Park, which from now on may be considered contaminated. At this point the question arises what will happen to this animal refuge under the threat of rabies, which, as is well known, attacks all the other wild animals through the foxes.

The presence of rabies in Val Venosta does not cause much concern, because the province of Bolzano has shown itself able to control rabies infection very well. Lombardy, too, however, reacted immediately by programming all the safety measures, which run from intensifying fox hunting to vaccinating all dogs and all domestic animals in contaminated zones, and has launched an effective publicity campaign.

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