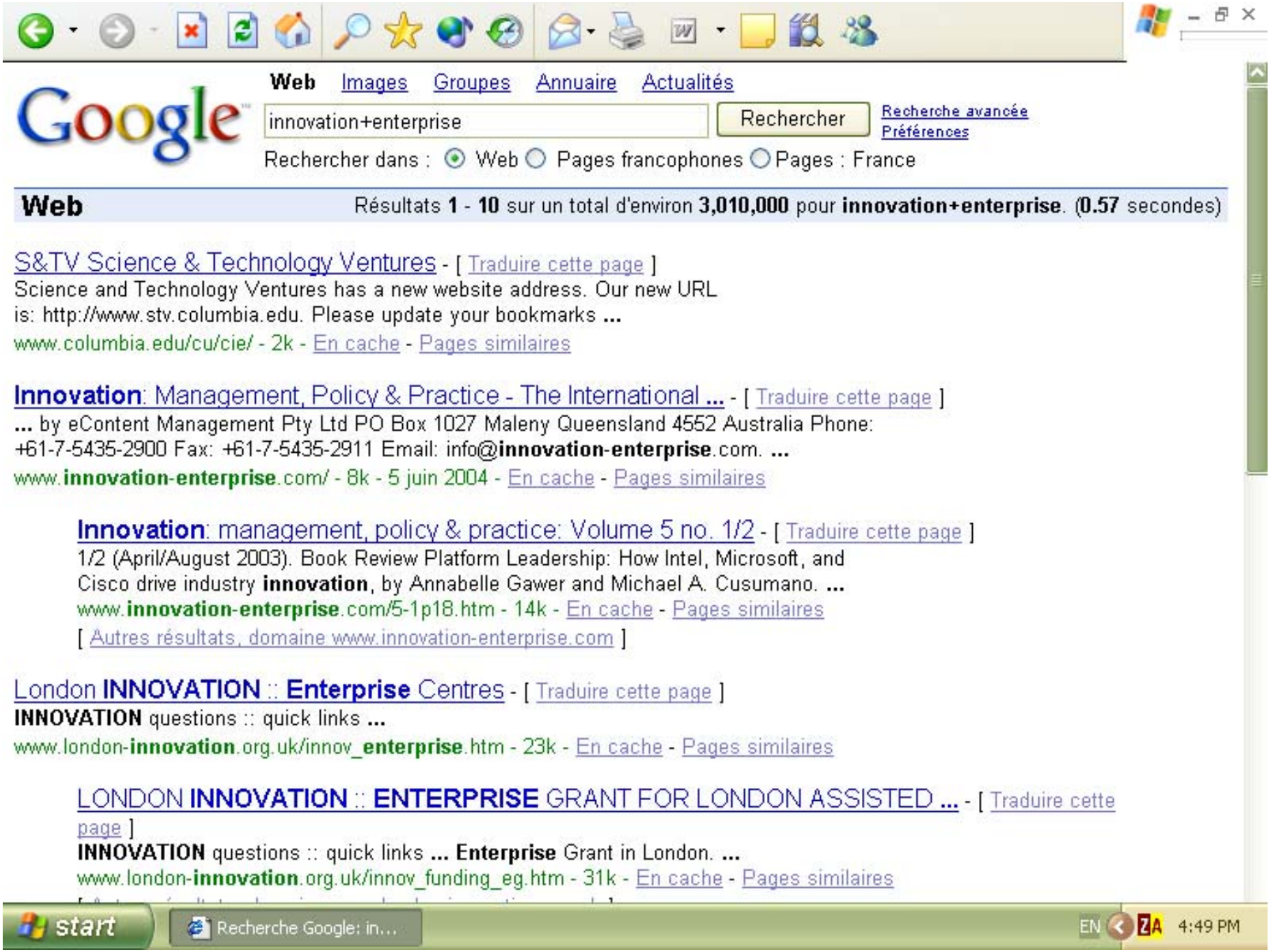
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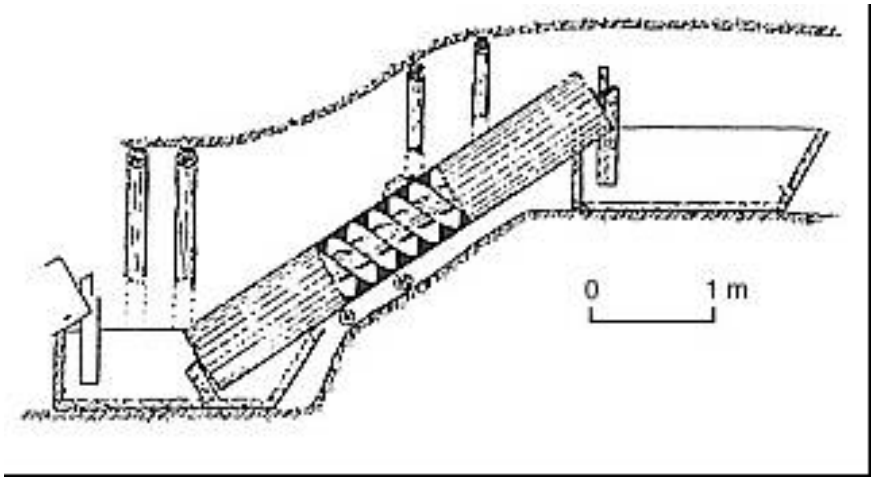


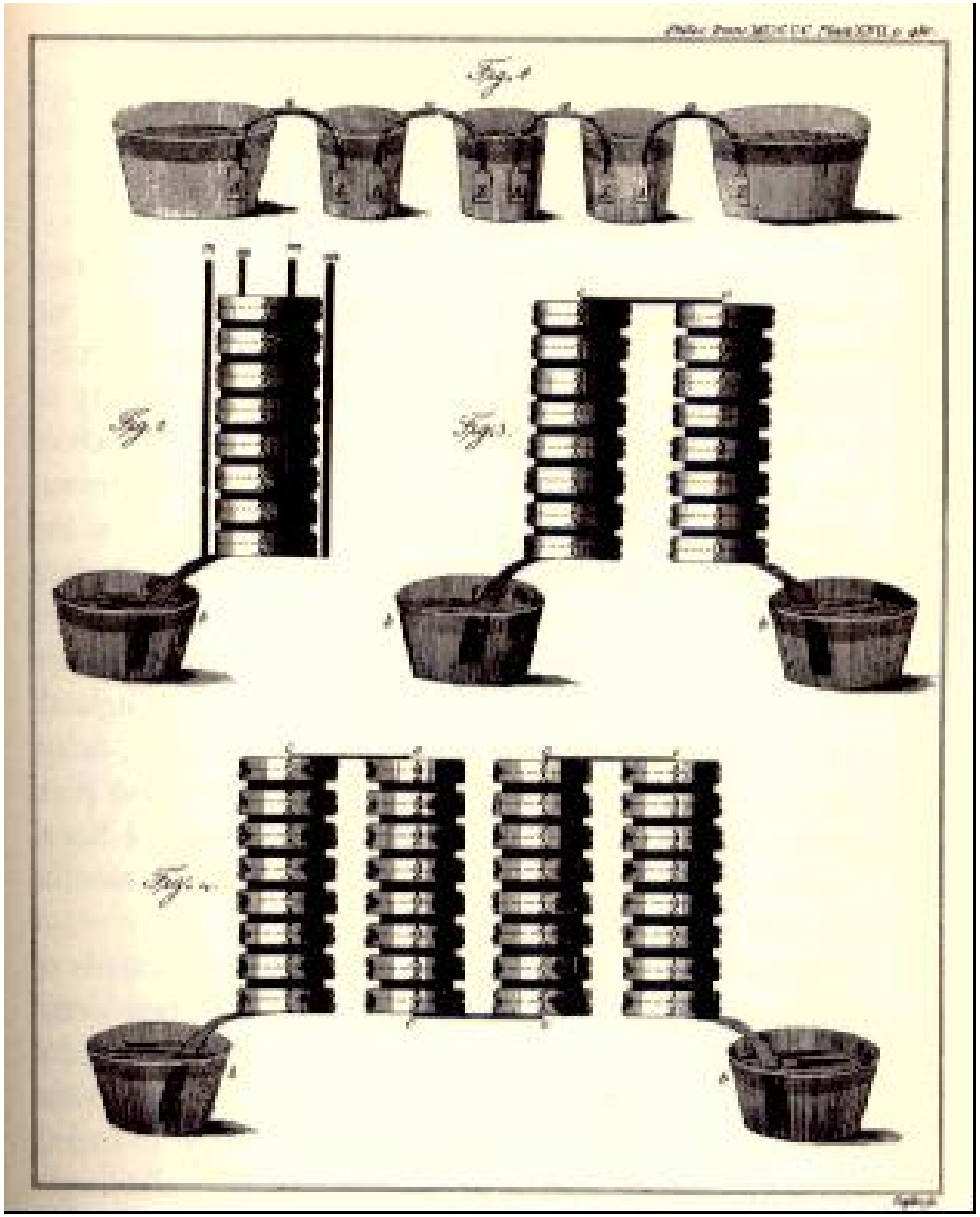

**Innovation implies inventiveness** **and practical implementation**



**Innovation & private Entreprise ; T.Govers, 2004**

**Innovation is often identified with *new products*, and consumers have become so demanding for novelty that "innovation" has become common place in the language of marketing and publicity.**

**But innovation can also consist in *improving existing products*, making them safer, or easier to use, or more compatible with environmental concerns, for instance. Obvious examples can be found in the automobile industry, among others.**

**Innovation also applies to *new ways of producing* the same or improved products, more reliably , more quickly, and most often more economically.**

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# Renault launches 5,000 euro car

**French carmaker Renault has unveiled its budget 5,000 euro (£3,335; $6,110) car as the company attempts to drive growth in emerging markets.**

The Logan will be built by Renault's Romanian subsidiary

Renault hopes the new Logan sedan will help it achieve annual sales of four million vehicles by 2010.

The launch of the car comes as Renault seeks growth outside its core western European markets.

The Logan will be built by Dacia, a loss-making Romanian subsidiary of the French firm.

Renault said the Logan, part of the company's X90 family of vehicles, would be launched in Romania in September and exported to eastern and central European countries and the Middle East.

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**In all cases, innovation, to be relevant to private enterprise, has to have tangible impact on the product or service proposed to the customer.**

**Because it is ultimately customer - oriented, "innovation" extends beyond the concept of R&D :**

**upstream it includes market investigation,**

**downstream it requires the realisation of working products or processes, the monitoring of customer satisfaction and the protection of property rights.**

**The "D" of R&D, transforming an idea or laboratory result into a working prototype, is of course an essential requirement.**

**The question whether the "R" is fundamental or applied should not be over- emphasised :**

**applied research often draws its inspiration from fundamental research, and fundamental research provides excellent training for those who engage in practically-oriented investigations;**

**fundamental research, on the other hand, can find many themes of interest in the concerns and challenges encountered in daily practice, ranging from healthcare to microelectronics, from crop protection to space exploration.**



**Innovation & private Entreprise ; T.Govers, 2004**

**dimanche 25 janvier 2004, 16h28**

**Le CD est condamné mais la musique en ligne est un marché risqué**

Par Bernhard Warner

**CANNES (Reuters) - Les sites web de vente de musique par téléchargement vont rendre le compact-disc obsolète d'ici cinq ans, mais la moitié des entreprises qui se lancent dans le commerce de fichiers musicaux sur internet disparaîtront d'ici la fin de l'année, selon une étude de la firme américaine Forrester Research.**

**D'ici 2008, les ventes de musique numérique en ligne représenteront un tiers du marché aux Etats-Unis et près de 20% en Europe, pour un chiffre d'affaires total de plusieurs milliards de dollars, précise l'étude, rendue publique à Cannes à l'occasion du Midem, le marché professionnel international de la musique.**

**Innovation most often carries risk**

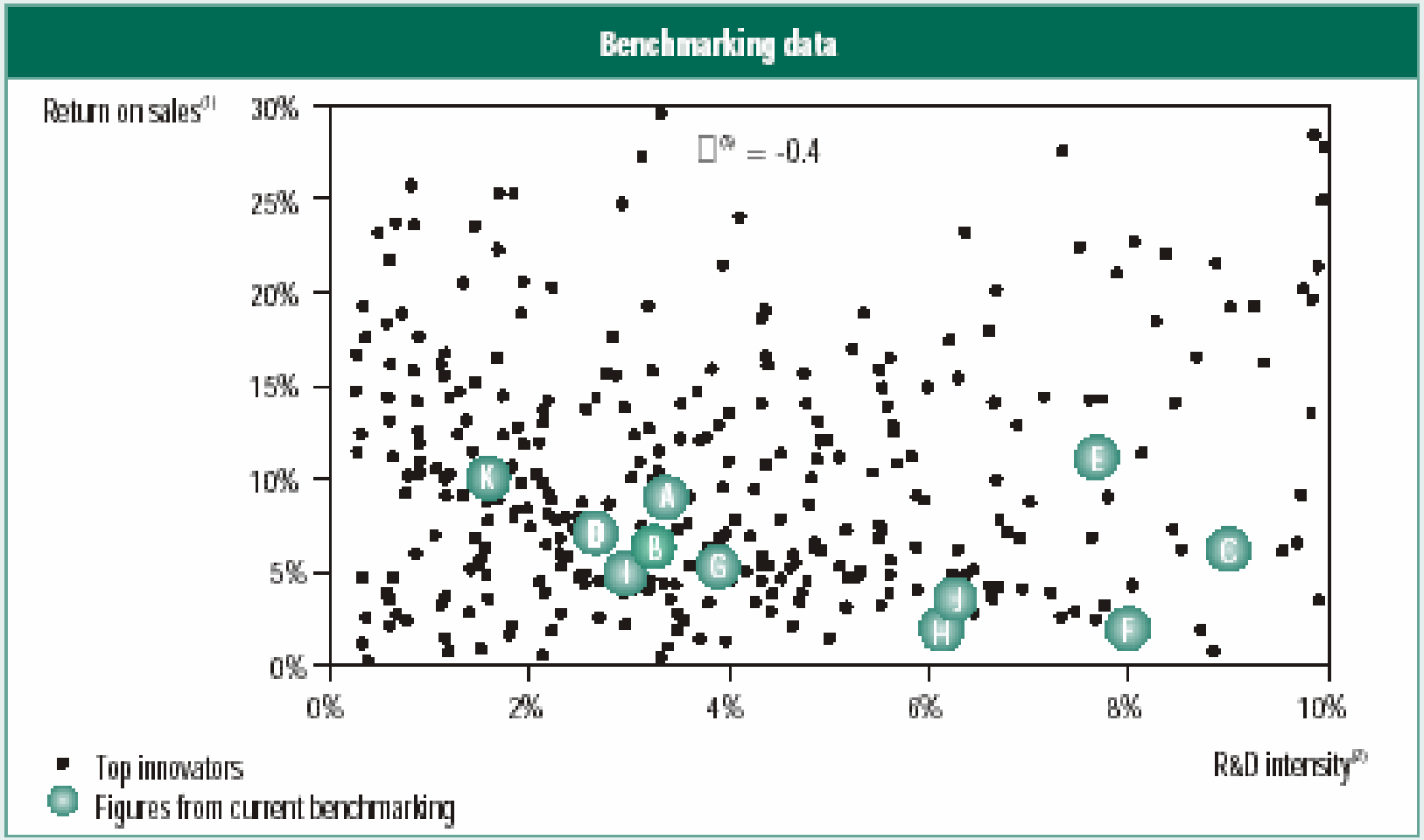
**The goal of private enterprise is to create value for its owners, whether they are the family that owns a bakery shop, or the shareholders of a big multinational.**

**Note that creating value does not necessarily mean generating cash that is distributed as lavish yearly divident. It can also mean reinvesting profits to open a second bakery shop, or to create a subsiduary in China.**

**Innovation, in a private company, is motivated by its contribution to the creation of value. In to-day's competitive markets, innovation is most often indispensable to respond to customer demand, and to ensure competitive advantages required for the firm's perenity and growth.**

Source: Boston Consulting Group 2003, "World-Class Innovation"

FIGURE 2




R&D FIGURES FROM CURRENT BENCHMARKING

**The correlation between the generation of profit and"innovation intensity", i.e the ratio between innovation expenditures and turnover, is far from straightforward.**

**What counts is how effective innovation is in ensuring the firm's ability to respond to market demand and to compete effectively with other companies that serve the same markets.**

**In a competitive environment, innovation is often a condition for survival. An enterprise that does not innovate faces the risk of being rapidly overtaken by competitors. With little opportunity for growth it will decline, and disappear from the market place.**

**The questions are simple to ask, much more difficult to answer : what, how much, when, how? Because resources are limited, and choices have to be made.**

## SIMULATION of P & L

| | | Base | Volume growth | Volume decrease | Price war | Price war + innov. incr. |
|---|---|---|---|---|---|---|
| Year | | 1 | 2 | 3 | 4 | 5 |
| Sales Turnover | | 100 | ***110*** | ***100*** | ***90*** | 90 |
| Cost of sales | "Fixed" | 30 | 30 | 30 | 30 | 30 |
| | Proportional | 30 | ***33*** | ***30*** | 30 | 30 |
| Gross Margin | | 40 | 47 | 40 | 30 | 30 |
| General Expenses | Innovation | 4.8 | 4.8 | 4.8 | 4.8 | ***5.8*** |
| | Other" fixed' | 8 | 8 | 8 | 8 | 8 |
| | Proportional | 1 | ***1.1*** | ***1*** | 1 | 1 |
| Operating Profit | | 26.2 | 33.1 | 26.2 | 16.2 | 15.2 |
| Amortisation | | 10 | ***11*** | 11 | 11 | 11 |
| Operating Income | | 16.2 | 22.1 | 15.2 | 5.2 | 4.2 |
| Financial, exceptionals | | 5 | 5 | 5 | 5 | 5 |
| Earnings before taxes | | 11.2 | 17.1 | 10.2 | 0.2 | -0.8 |
| Taxes | | 33% | 33% | 33% | 33% | ***0%*** |
| Net earnings | | 7.5 | 11.5 | 6.8 | 0.1 | -0.8 |

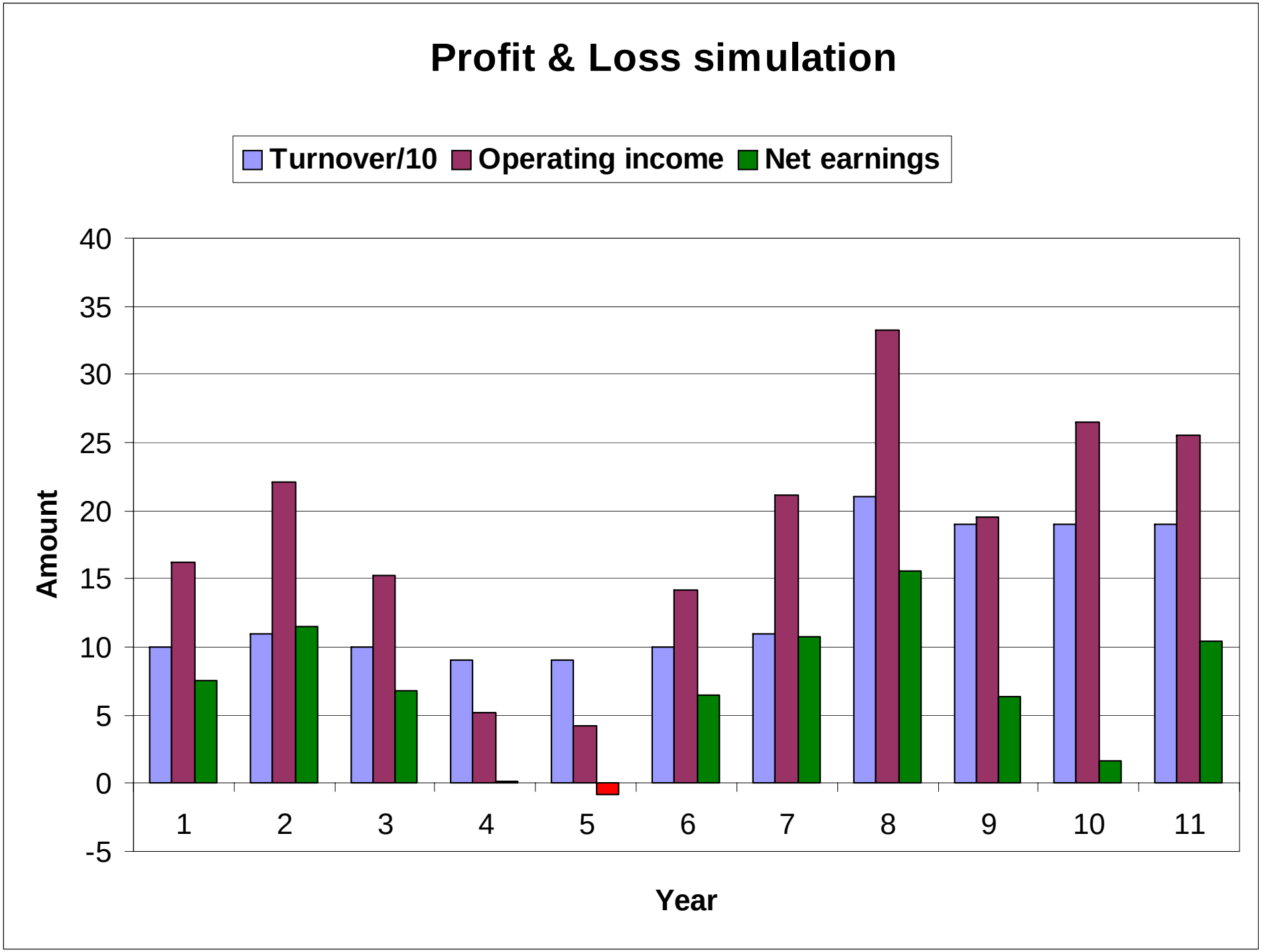


**Innovation & private Entreprise ; T.Govers, 2004**

| | | Price increase | Volume growth | Acquisition (1 + 7) | Volume decrease | Restructure | New Base |
|---|---|---|---|---|---|---|---|
| Year | | 6 | 7 | 8 | 9 | 10 | 11 |
| Sales Turnover | | ***100*** | ***110*** | 210 | ***190*** | 190 | 190 |
| Cost of sales | "Fixed" | 30 | 30 | 60 | 60 | ***54*** | 54 |
| | Proportional | 30 | ***33*** | 63 | ***57*** | 57 | 57 |
| Gross Margin | | 40 | 47 | 87 | 73 | 79 | 79 |
| General Expenses | Innovation | 5.8 | 5.8 | 10.6 | 10.6 | 10.6 | ***11.6*** |
| | Other" fixed | 8 | 8 | 16 | 16 | ***15*** | 15 |
| | Proportional | 1 | ***1.1*** | 2.1 | ***1.9*** | 1.9 | 1.9 |
| Operating Profit | | 25.2 | 32.1 | 58.3 | 44.5 | 51.5 | 50.5 |
| Amortisation | | 11 | 11 | ***25*** | 25 | 25 | 25 |
| Operating Income | | 14.2 | 21.1 | 33.3 | 19.5 | 26.5 | 25.5 |
| Financial, exceptionals | | 5 | 5 | 10 | 10 | ***24*** | ***10*** |
| Earnings before taxes | | 9.2 | 16.1 | 23.3 | 9.5 | 2.5 | 15.5 |
| Taxes | | 33% | 33% | 33% | 33% | 33% | 33% |
| | | **-T.C.** | | | | | |
| Net earnings | | 6.4 | 10.8 | 15.6 | 6.4 | 1.7 | 10.4 |



**Innovation & private Entreprise ; T.Govers, 2004**



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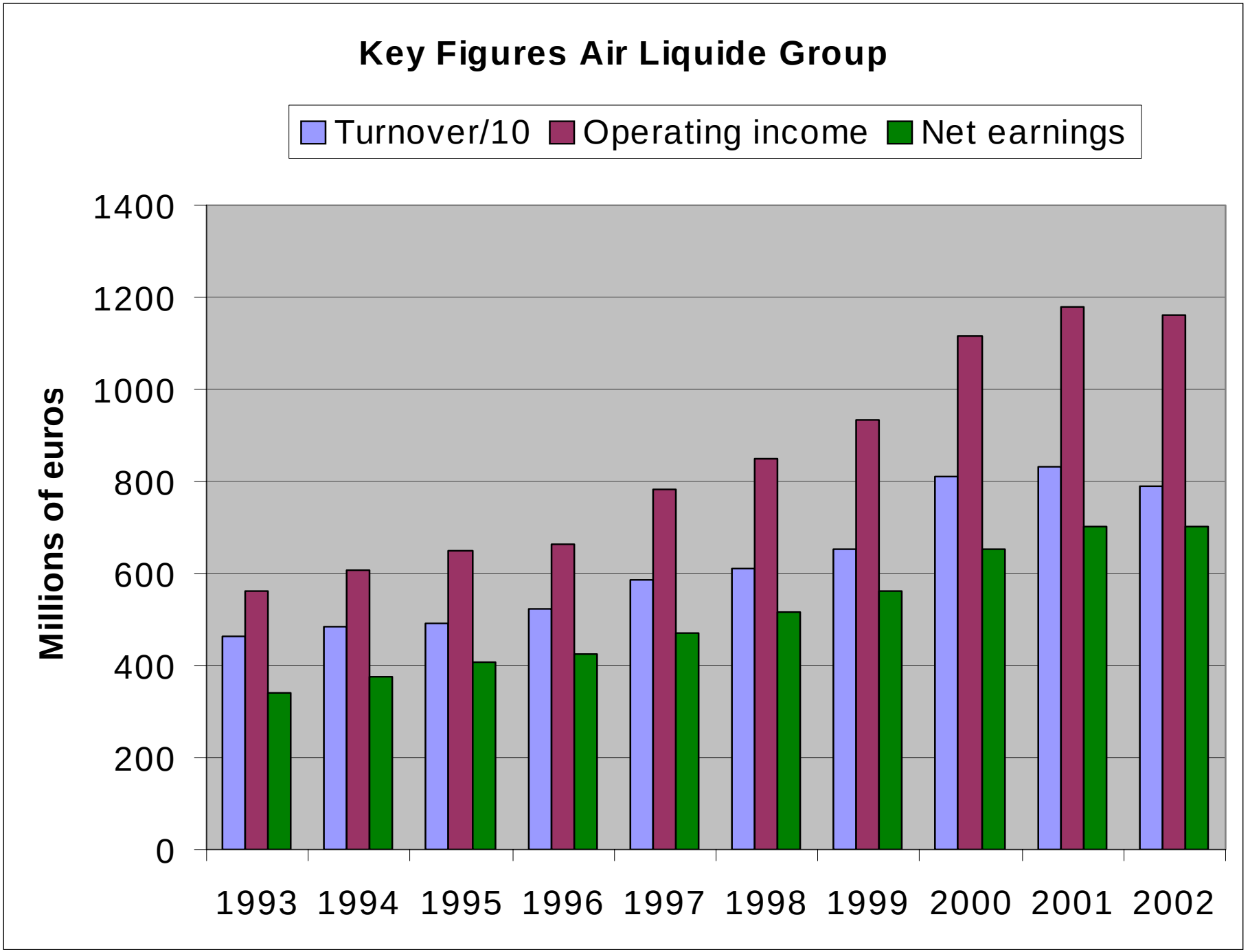




Innovation & private Entreprise ; T.Govers, 2004


# INNOVATION AND TECHNOLOGICAL PROGRESS

New gas production technologies, innovative applications, high value added services: these are the constant goals for Air Liquide's research and engineering teams and for the Group as a whole.

## INNOVATION IN ALL ITS FORMS

Air Liquide's research and development teams work on a number of industrial and medical gas projects, focusing on three main areas: the environment, health and hygiene, and advanced technologies. These teams are based at Air Liquide's **Research Centers**, **Engineering** platforms and within the **Advanced Technology Division**. The Services Division also plays an important innovative role and, thanks to its expertise in information technologies, is involved in the design of new high value added services.

Innovation is a state of mind for many Group employees. This is clearly illustrated though the many inventors recognized by the Group each year and the considerable success of the Innovation Contest, which was organized as part of Air Liquide's 100-Year Celebrations.

Each year, Air Liquide dedicates a special day to the Group's inventors. In 2002, 79 inventions were officially recognized for their contribution to the Group's technological development. Twenty-four inventors were invited to receive awards during a special ceremony at the Palais de la découverte (Paris) on December 2.

> Budget **150 million euros**
> **500** researchers representing 25 nationalities
> 8 research centers (located in the **US, Japan,Germany and France**)
> 5 engineering platforms (US, Japan, India, China and France)
> 194 patented inventions in 2002
> Over **100 industrial partnerships**
> Over **100 international collaborations with universities and research institutes**



**N.B.: 2002 turnover = 7900 million €; innovation = 1.9%**


Bar-Charts AIR LIQUIDE 01/03
AIR LIQUIDE
MM(50)
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Volume
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2400
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Milliers
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Bar-Charts AIR PRODUCTS & CHEM
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Volume
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Bar-Charts SIEMENS 18/12
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Bar-Charts ALCATEL A
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Millions
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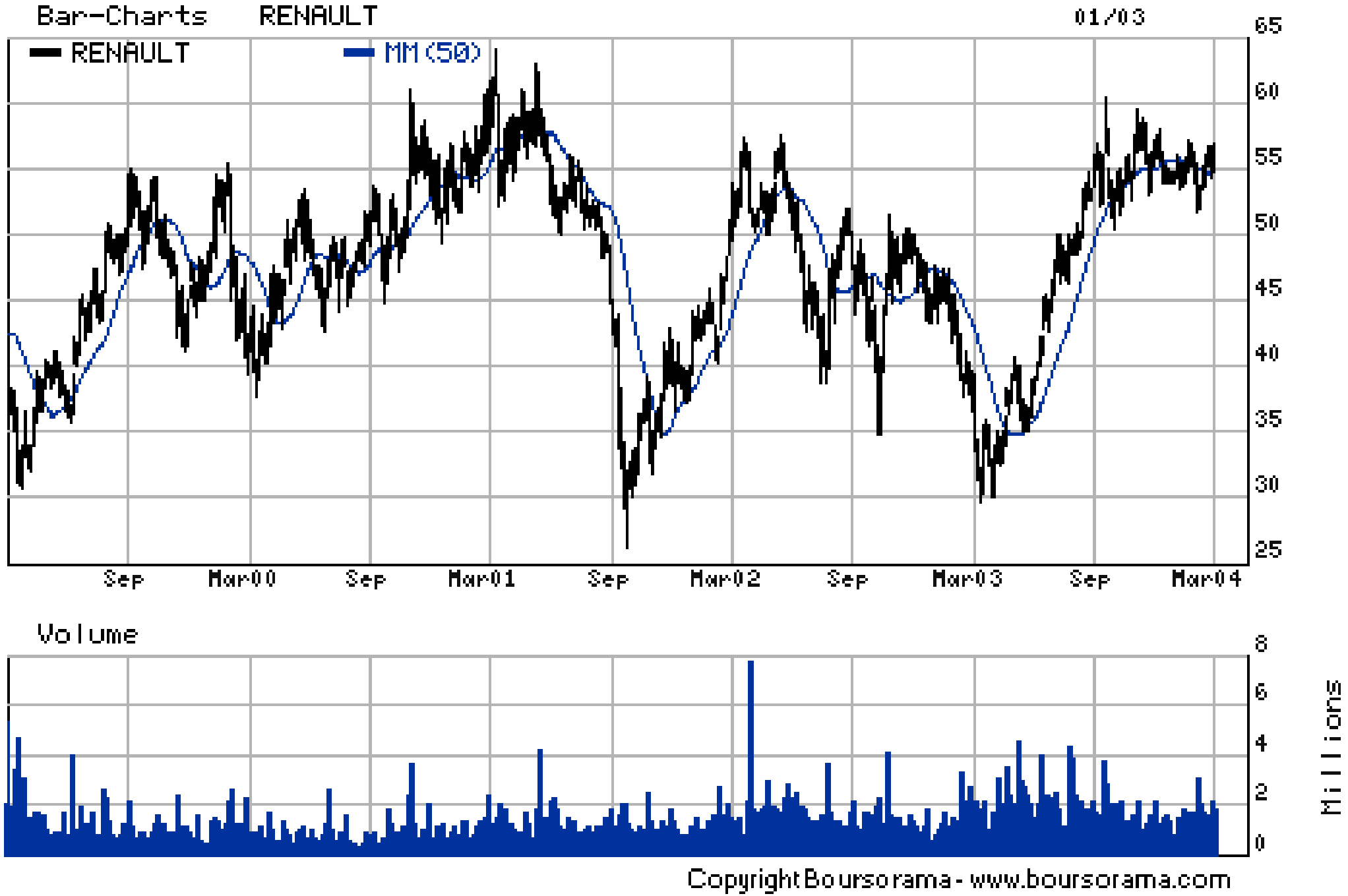
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Volume
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Millions
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**Which of these companies would you be willing to put your money into ?**

**Why ?**

**Which of these companies would you be willing to work for ?**

**Why ?**

**Which of these companies would you be wanting to manage ?**

**Why ?**



**Innovation & private Entreprise ; T.Govers, 2004**

**We forgot the most important question :**

**Which company would you buy from ?**

**Major companies have the financial and human resources to support a significant innovation effort, if they so chose. While this does not guarantee that their innovation will be successful (e.g. Xerox), at least this possibility does exist.**

> **"How about Xerox? .. in 1970 .. getting filthy rich .. research leaders convinced management that it had to plow back millions into research.. they hired the smartest people and built Xerox Palo Alto Research Center. PARC researches invented the ethernet, windowed computer applications, screen icons, and laser printers. Of the 10 most important developments in computing, Xerox PARC birthed at least half of them. And how did Xerox management handle this windfall? They blew it.. Almost every other company in Silicon Valley benefited from PARC inovations, but the only one Xerox managed to cash in on is the laser printer..Xerox still spends $900 million in R&D annually, almost 6% of its revenue. And do they have any knock-your-socks-off products to show for it? Nope. Can you think of a worse-run company over the last 20 years..?"**
>
> **From "Why big companies can't invent" by Howard Anderson, in Technology Review (MIT) May 2004**

**The challenge is to leave researchers with enough creative breathing space to come up with original ideas that can be transformed into market stars or production breakthroughs,**

**and at the same time maintain the necessary discipline to select a limited number of projects and allocate the necessary resources to bring these to market or into practise reliably, on time, and within budget.**

**This necessarily implies modifying existing company practice. As the resistance to change of a large organisation can be rather formidable, success depends to a significant extent on company culture and on the convincing power of key individuals.**



Innovation & private Entreprise ; T.Govers, 2004




Innovation & private Entreprise ; T.Govers, 2004

http://esapub.esrin.esa.it/rfs/rfs24/rfs24e.pdf

# Air Liquide – *feeding the launch base's appetite*

A ubiquitous rumbling permeates the site, muffled rhythmical thuds punctuate the screech of grinding machines and the hiss of a thousand refrigerated pipes. The sounds you are hearing are the heartbeat of Air Liquide's plant at Kourou, and the precious fluid that is being pumped through the underground pipelines is hydrogen, at fifty times atmospheric pressure. In one day, thirty thousand litres of hydrogen can be produced to satisfy the needs of the Ariane 5 launcher. This is one of the company's largest plants, and it forms a vital node in the vast network of pipeline, totalling 45 km in length, that spans the entire launch base.

Ariane 5 has a healthy appetite for hydrogen, consuming 500 000 litres for each mission. Pierre Marnas, the Head of Air Liquide Spatial, recalls how hydrogen for Ariane 4 and its H10 engine used to be produced in mainland France and shipped to Kourou by container. "Unthinkable, for a voracious launcher like this," he adds. So a new Kourou plant was specially constructed in 1991 (see photo below), with Air Liquide providing all the necessary capital. Without a ready local source of natural gas, the company turned to methanol as the raw material, imported from nearby Trinidad and Tobago.

Where Ariane 4 cryogenic propellant filling was done on the launch pad on the very day of the launch, the Ariane 5 cryogenic stage is filled from tanks that are towed into the launch zone four days before takeoff. 'Centipedes' (mille-pattes) is what the locals call the 160-wheeled tractors that ply the track running between the production plant and the launch pad. "You need a hefty reserve of propellant, beyond what is actually on board when the launcher lifts off," explains Marnas. "This is to meet contingencies, such as repeat launch attempts." So there are three storage tanks holding a total of 140 000 litres of liquid oxygen (LOX), cooled down to -183 °C, and three tanks totalling 320 000 litres of liquid hydrogen (LH), at a temperature of -253 °C. The tank tractors are kept busy moving these six tanks and a seventh, holding 110 000 litres of LH, which is used to pressurise the rest. Technicians top up the launcher until the very last minute, so that it lifts off with as much propellant as possible.



Innovation & private Entreprise ; T.Govers, 2004

**..In one day, thirty thousand litres of hydrogen can be produced to satisfy the needs of the Ariane 5 launcher...**

**Ariane 5 has a healthy appetite for hydrogen, consuming 500 000 liters for each mission. Pierre Marnas, the head of Air Liquide Spatial, recalls how hydrogen for Ariane 4 and its H10 engine used to be produced in mainland France and shipped to Kourou by container. "Unthinkable for a voracious launcher like this", he adds. So a new Kourou plant was specially constructed in 1991 with Air Liquide providing all the necessary capital. Without a ready source of natural gas, the company turned to methanol as the raw material, imported from nearby Trinidad and Tobago.**



Innovation & private Entreprise ; T.Govers, 2004

Les activités d'**Air Liquide Spatial Guyane** au Centre Spatial Guyanais correspondent à quatre types de responsabilités distinctes :

**maintenance des installations cryogéniques** de l'ELA 2 (Ensemble de Lancement n° 2) et de l'ELA 3 (Ensemble de Lancement n° 3)

production de gaz :

**oxygène liquide**
**azote liquide**
**hydrogène liquide**
**hélium liquide et comprimé**
**azote comprimé**
**air comprimé**

responsabilité sur le plan de **la logistique et des transports de ces produits** sur le Centre Spatial Guyanais

## En Janvier 1961 -- France

Jean Delacarte, Ancien Directeur Général de la Société Air Liquide, livre une anecdote qui date de quelques jours avant l'accord franco-anglais concernant le Blue-streak.

**Mon président, Jean Delorme, qui avait effectué un travail de lobbying sur l'espace a été convoqué par le général De Gaulle qui lui a demandé :**

***" L'espace, à quoi cela va servir ? "***

**Jean Delorme a répondu que par la présence prochaine dans l'espace de satellites de télécommunications directes, tous les foyers français pourront capter la télévision américaine.**

***" Imaginez qu'un Président américain puisse se faire entendre et voir sur les postes français et déclarer :***

***" Le général De Gaulle est un imbécile ! "***

***sans que vous puissiez renvoyer le compliment de la même manière. "***

**Sa conviction fut quasi immédiate !**

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# News & Reviews

## October 2003: Herbert Demel Appointed CEO of Fiat Auto

Herbert Demel has been appointed Chief Executive Officer of Fiat Auto, the Fiat Group subsidiary that runs the Alfa Romeo, Fiat and Lancia brands, effective November 15, 2003.

Fiat has thanked Giancarlo Boschetti, who will leave the Group on the same date, for the intense work he performed in almost forty years of activity at top management levels, and expresses its best wishes for his future.

From the end of 2002 Mr. Demel has been President and Chief Executive Officer of Magna Steyr, a leading company in automotive engineering, two- and four-wheel-drive transmissions and in the development and assembling of automobiles for third parties.

Demel, born in Vienna 50 years ago, has a degree in mechanical engineering and vast professional experience in the automotive sector at an international level.

From 1984 to 1990 he was responsible for the development of ABS applications and quality control at Robert Bosch.

Next Revie
The World of Fiat
Fiat Punto
Fiat Multipla
Fiat Stilo
Fiat Ducato
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**N.B.: 1st semester 2004 losses: 570 million euro**

## Dr. Herbert DEMEL

- **Nov, 2002** MAGNA STEYR AG, Oberwaltersdorf
  President and Chief Executive Officer
- **May, 1997** Volkswagen Brazil President
- **March, 1995** AUDI AG, Ingolstadt chairman of the Management Board
- **Feb, 1994** Speaker of the Management Board and Chief Executive Officer with additional responsibility for Sales and Marketing
- **March, 1993** Member of the Board Responsible for Research and Development
- **1990** Senior Manager Responsible for Power Train Development **Audi AG**
- **1989** Robert Bosch GmbH, Stuttgart Responsible for Gearbox control units. ABS/ASR Application
- **1985** In charge of ABS / ASR-Applications
- **1984** Coordinator for Anti-Lock-Braking-System (ABS) Applications **Bosch GmbH**
- **1981** Doctorate
- **1978** Institute for Internal Combustion Engines and Automotive Engineering, Technical University Vienna Scientific / Engineering Assistant
- **1971** Vienna Technical University Studies of Mechanical Engineering Graduated as "Diplom Ingenieur"
- **1953** Born in Vienna, Austria

**The innovation capacity of small and medium-size enterprises ("SME") shows contrasting aspects.**

**For established SME's, maintaining a significant innovation effort independently is often prohibitatively expensive. They will benefit greatly from cooperative efforts in technological surveillance, links with academic institutions, joint developent projects, and the possibilty of funding through public subsidies. Innovation-oriented SME's have the potential of reacting to change much more rapidly than large firms. With the pace of innovation doubling every ten years (*), such agility is a major advantage. It also carries enhanced risk. The propensity, in the EU, to strive for long-term stable employ-ment is a major handicap in fostering innovation-oriented SME's and penalizes economic growth in the EU.**

**(*) Ray Kurzweil "Rules of Invention", Innovation Review (MIT), May 2004**

**On the other hand, the creation of "start-ups", new innovation-based companies, is increasingly recognised as a major contributor to growth in developed countries.**

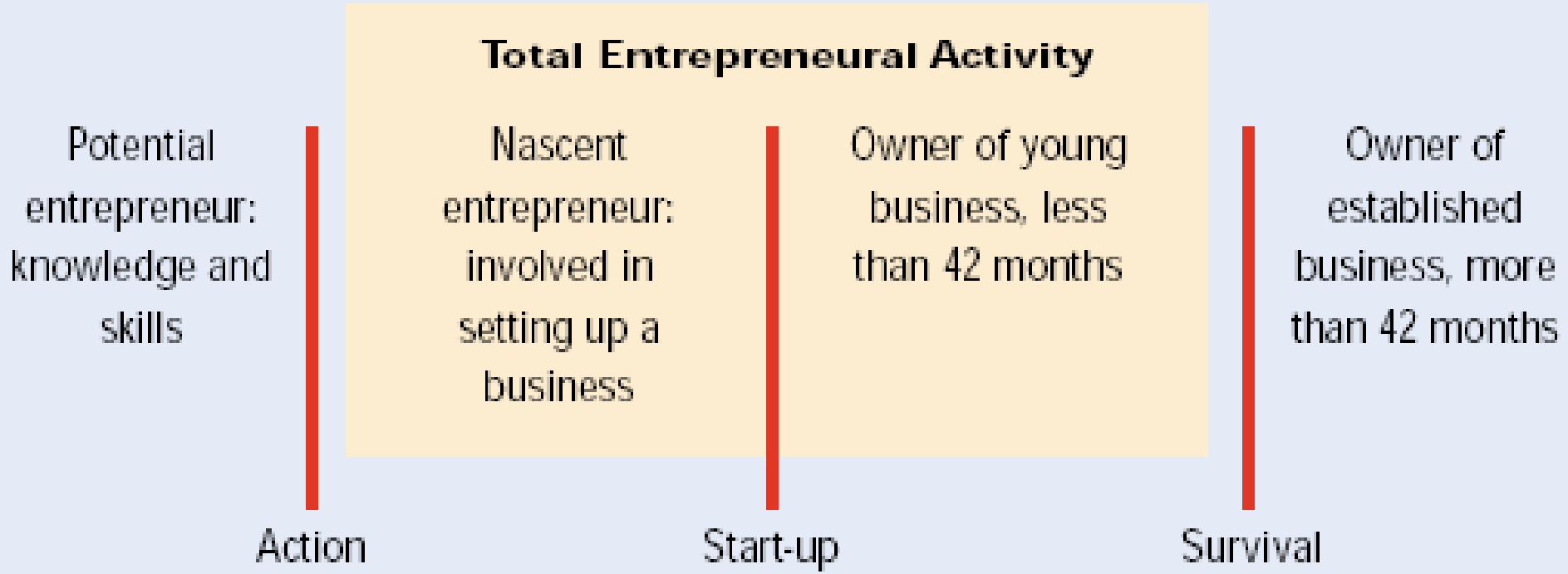
**"First, innovative start-ups often become fast-growing enterprises, and second, new products and processes provided by innovative start-ups are input for other (new) enterprises." (1)**

**(1)** **Entrepreneurship in the Netherlands** **see www.eim.nl or www.ez.nl**

# Entrepreneurship in the Netherlands

see www.eim.nl or www.ez.nl

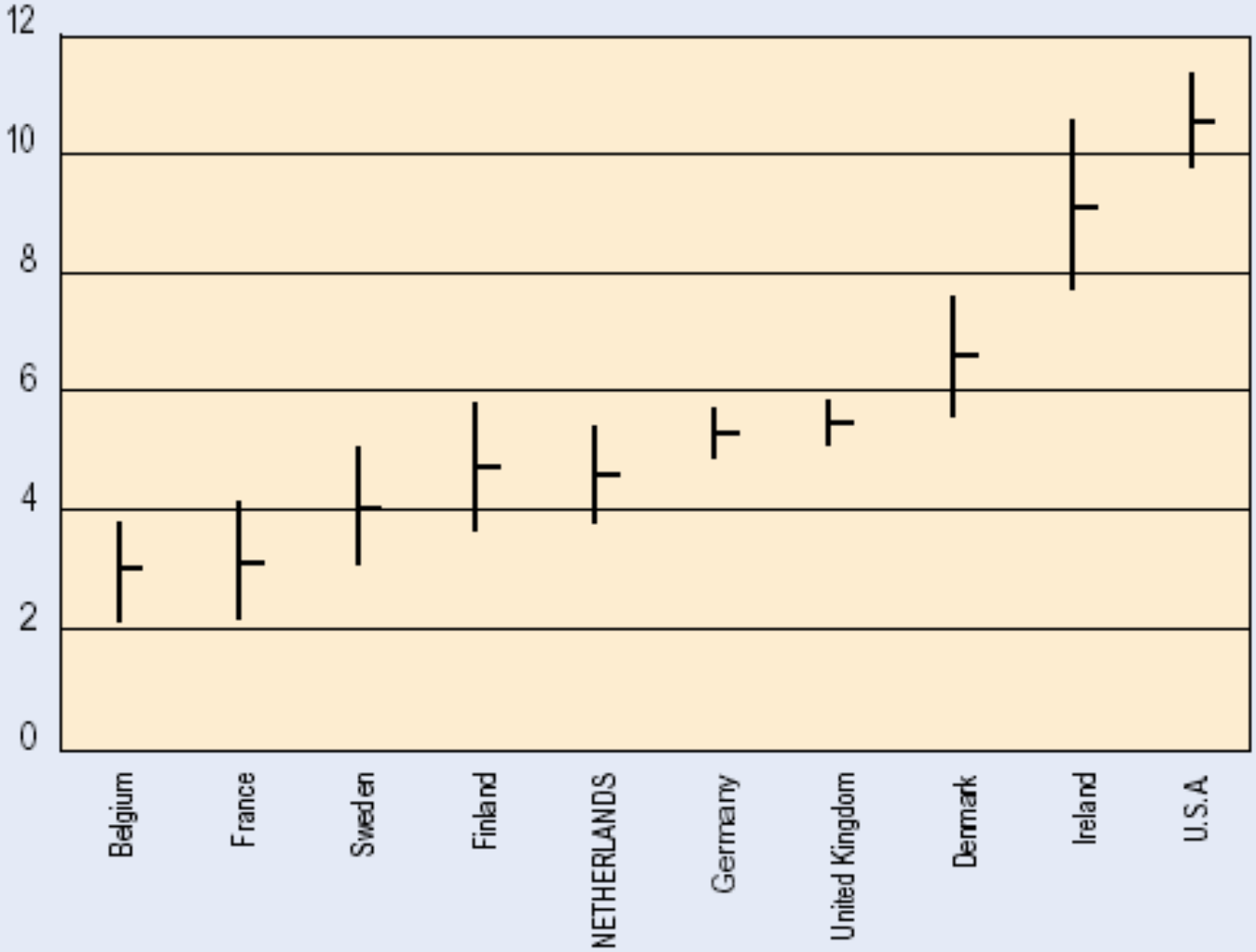
**Figure 1 Business start-up cycle and total entrepreneurial activity**



# Entrepreneurship in the Netherlands

see www.eim.nl or www.ez.nl

**Figure 2 Total entrepreneurial activity (TEA) indices, 2002**

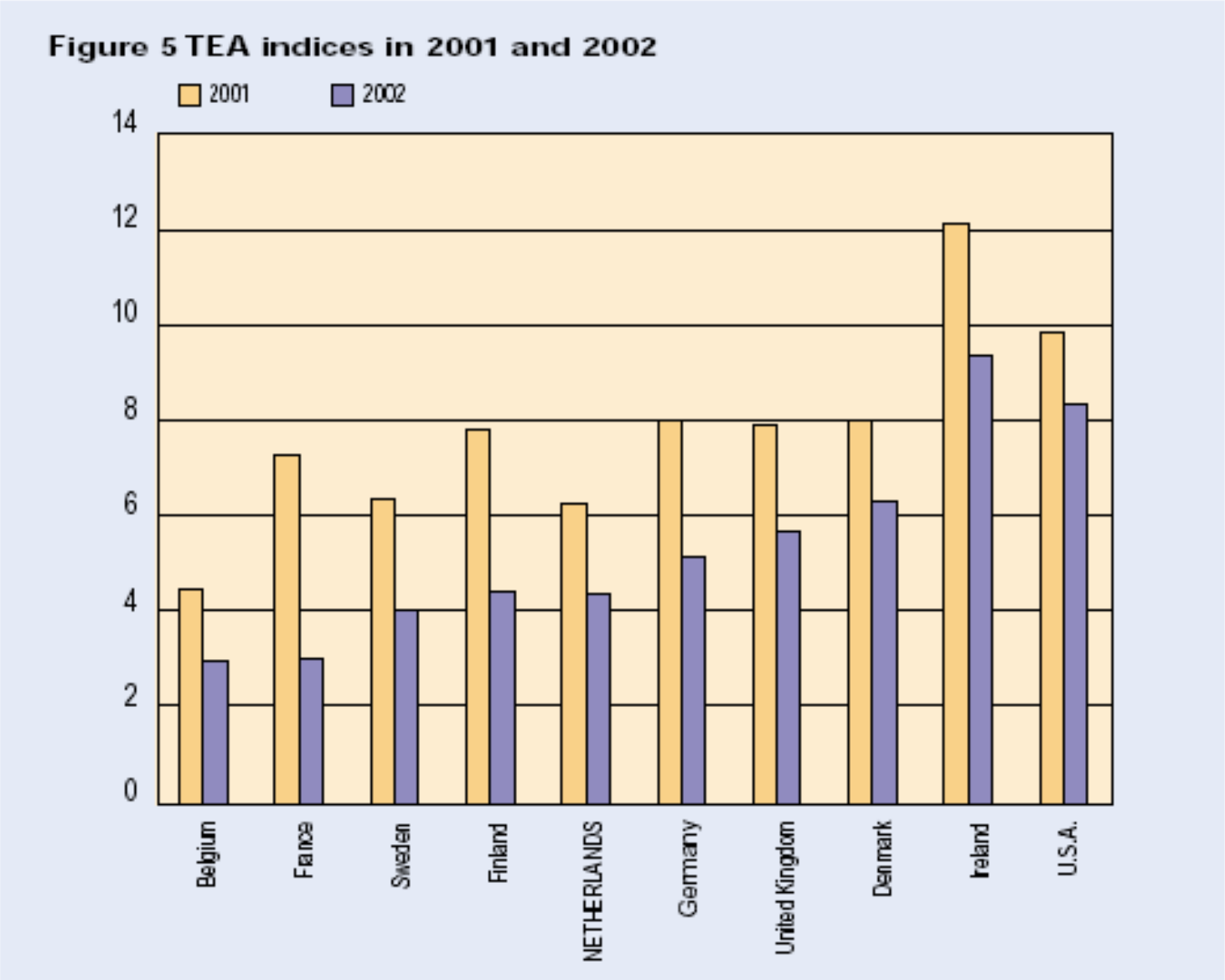



*Note:* *TEA is defined as number of nascent entrepreneurs and owners of young businesses per 100 individuals in the 18-64 adult population.*

*Source:* *EIM, on the basis of GEM (2002). The vertical bars represent the 95 percent confidence interval.*

# Entrepreneurship in the Netherlands

see www.eim.nl or www.ez.nl




*Source: GEM 2002.*

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**Table 3.1 R&D spending as % of GDP (2002)**

| | USA | FIN | B | D | UK | DK | F | NL | EU |
|---|---|---|---|---|---|---|---|---|---|
| Public | 0.66% | 0.98% | 0.56% | 0.72% | 0.66% | 0.75% | 0.77% | **0.88%** | 0.67% |
| Private | 2.04% | 2.68% | 1.45% | 1.80% | 1.21% | 1.32% | 1.36% | **1.14%** | 1.28% |
| Total | 2.70% | 3.66% | 2.01% | 2.52% | 1.87% | 2.07% | 2.13% | **2.02%** | 1.95% |

*Source: European Trendchart on Innovation 2002*

**N.B. :**
**Relative to an active population of 1000, Italy counts 2.9 researchers, the U.K. 5.5, Canada 6.1, Germany 6.7, France 7, the U.S. 7.9, Japan 9.7. ( French Ministery of Research, 2000)**

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**Table 3.2 R&D spending Public versus Private**

| | USA | FIN | B | D | UK | DK | F | NL | EU |
|---|---|---|---|---|---|---|---|---|---|
| Public | 24% | 27% | 28% | 29% | 35% | 36% | 36% | 44% | 35% |
| Private | 76% | 73% | 72% | 71% | 65% | 64% | 64% | 56% | 65% |

*Source: European Trendchart on Innovation 2002*

# CHINA ORBITS MAN

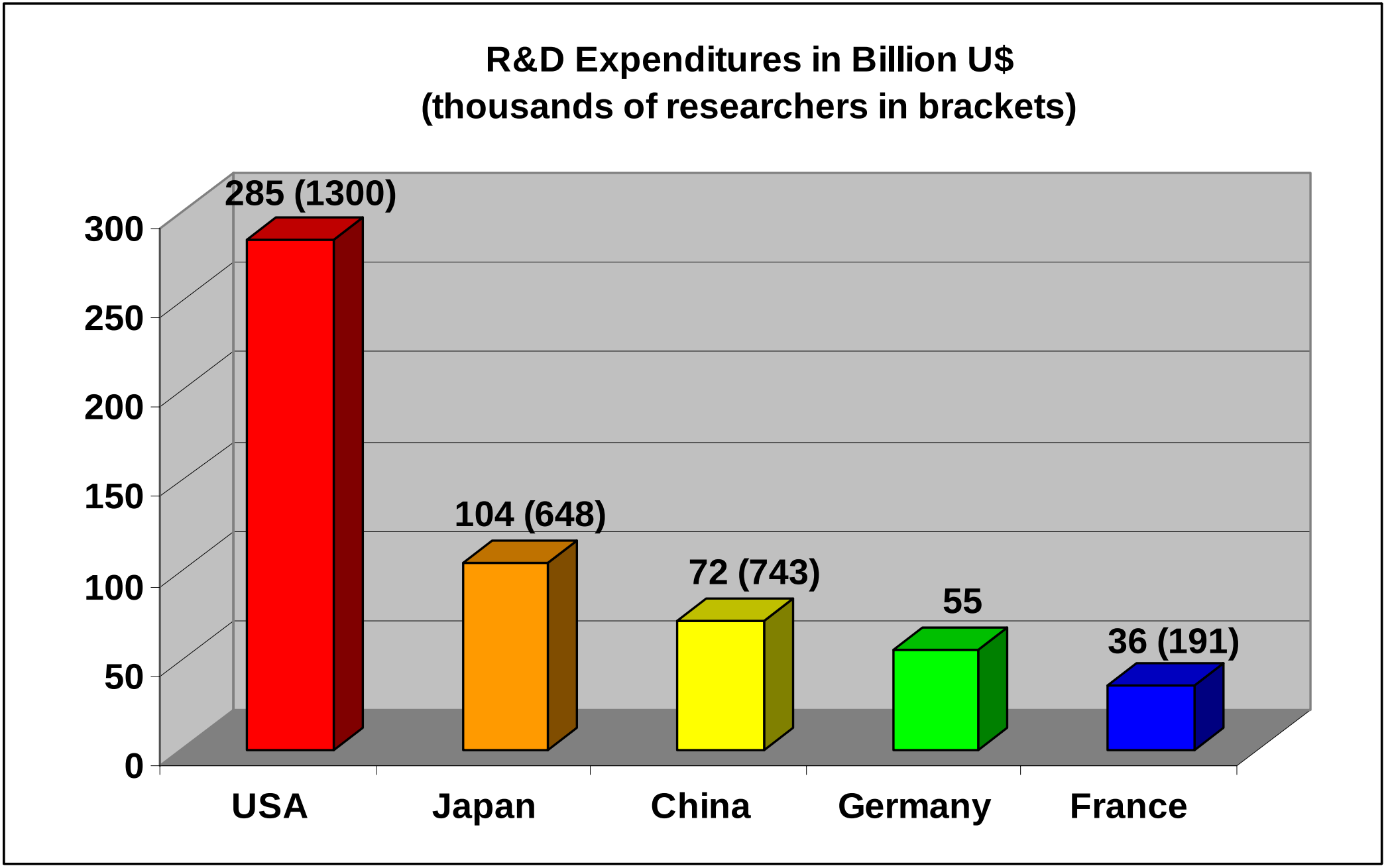
**BY STEPHEN CLARK**
**SPACEFLIGHT NOW**
Posted: October 15, 2003

Over a decade in the making and four decades behind the Soviet Union and United States, China became only the third nation on the planet to mount a manned space mission Wednesday when a single crewman vaulted into space inside a capsule for a one-day flight.

The momentous time came when the clock struck 9 a.m. Wednesday in the Chinese captial of Beijing (0100 GMT; or 9 p.m. EDT Tuesday).

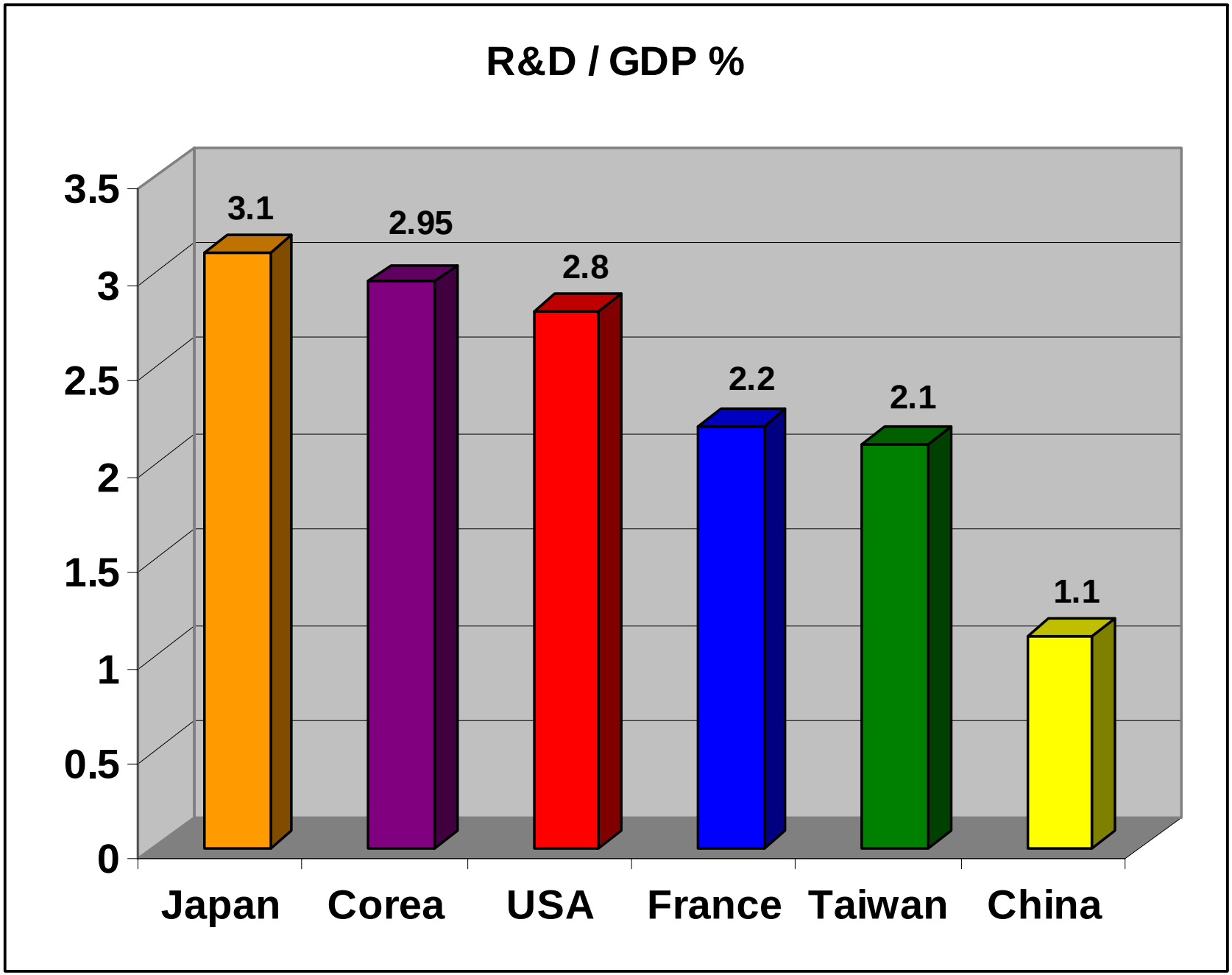
With engines firing to produce well over a million pounds of liftoff thrust, the two-stage Long March 2F rocket bolted away from its shadowy launch pad at the Jiuquan launch center, located near the border between the Gansu and Inner Mongolia provinces in northern China's Gobi desert.

China's first human spaceflight gets underway with the successful launch of Shenzhou 5 atop a Long March 2F rocket.






Innovation & private Entreprise ; T.Govers, 2004



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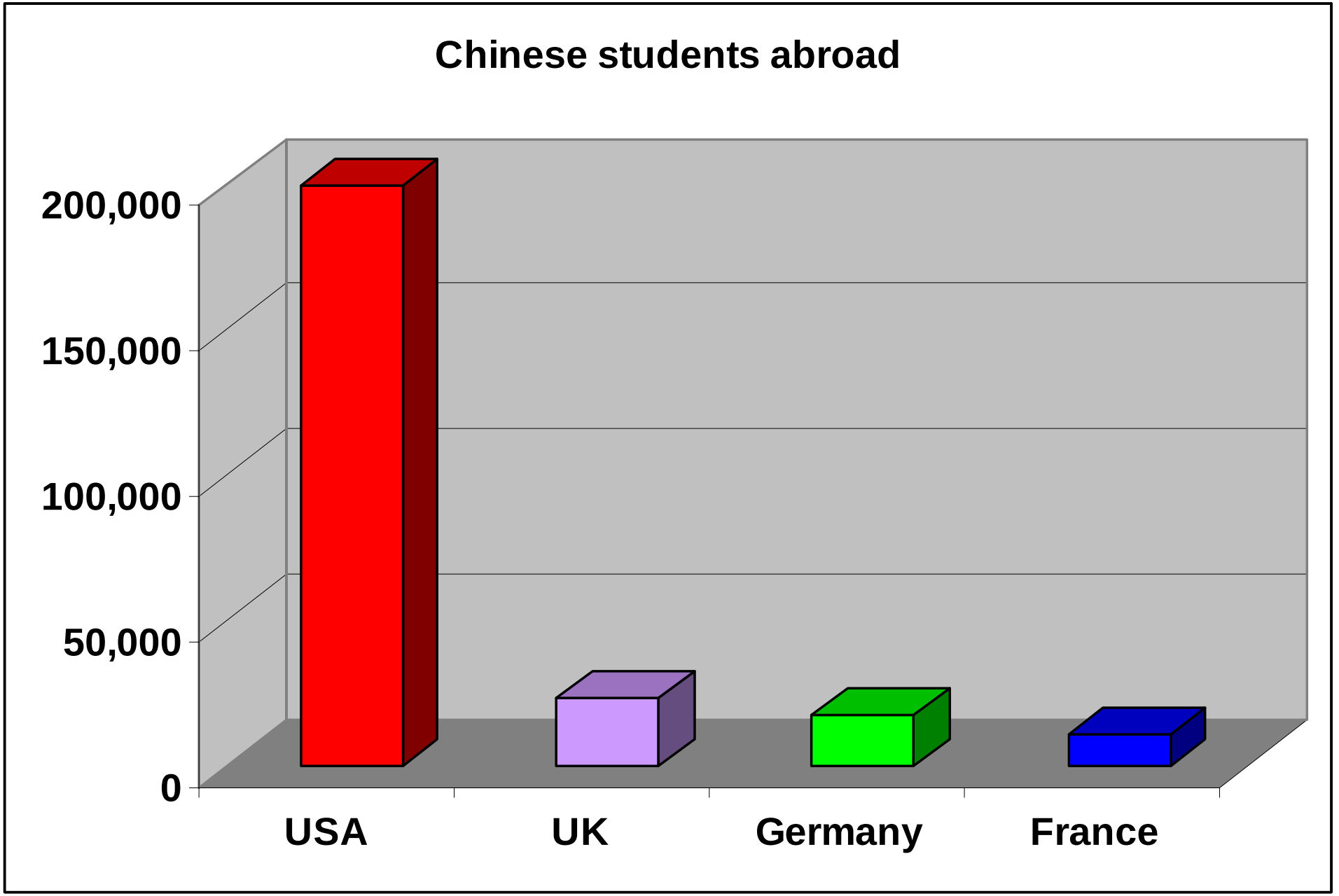




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**More than 1 million university graduates per year**
**Over 500 000 scientists and engineers per year**
**About 70 000 Master's and PhD's per year**

**Of the 400 to 500 000 Chinese who left to study abroad since 1978, about 150 000 returned, educated in the best universities.**

**Over the next few years, China's GDP will grow at a rate of 7 to 10% per year, while those of the EU and and the US grow at 1 to 3% . China"s ambition is to devote 3% of its GDP to innovation within about 10 years. It will then be a close second to the USA in absolute R&D expenditure.**



Innovation & private Entreprise ; T.Govers, 2004

**Question open for debate: is this formidable acceleration an opportunity or a thread for Europe?**



Innovation & private Entreprise ; T.Govers, 2004

**By Greg Tarr -- TWICE, 5/17/2004**

**NEW YORK— Thomson formally celebrated the send-off of its nearly finalized joint venture with China's TCL by introducing a comprehensive line of next-generation HDTVs, including 11 fully integrated "digital cable-ready" (DCR) sets.**

**The new television offerings, which will be produced by the new TCL-Thomson Electronics (TTE) company after that company begins operations in July, will include two previously announced RCA Scenium "Profiles" ultra-thin DLP rear-projection sets that measure 6.85 inches deep and offer DCR capability.**

**The high-end DLP sets are expected to begin shipping in September, and to have the industry's thinnest rear-projection cabinets. Company executives said the sets would be thin and light enough to hang on walls.**

**The new sets will serve as statement pieces for the new television technologies to emerge from the joint venture company. Under TTE, Thomson will work in tandem with TCL on television product research and development and will coordinate sales and marketing in the United States and Europe, while TCL supplements its market-leading position in China's television industry with new high-tech products, such as DLP TVs.**

**The new company "will become the world's largest manufacturer of color TVs, with an annual production capacity of 22 million sets and annual sales of 18 million sets, accounting for 11 percent of the global TV market," said Li Dongsheng (a.k.a. Tomson Li), chairman of TCL corporation.**

**If you can't beat them, join them.**
**Access to the fasted-growing TV market worldwide.**
**Access to low-cost production for commodity products.**
**Concentrate domestically on high-tech products and services.**

Chinese soldier launches fire-arrow

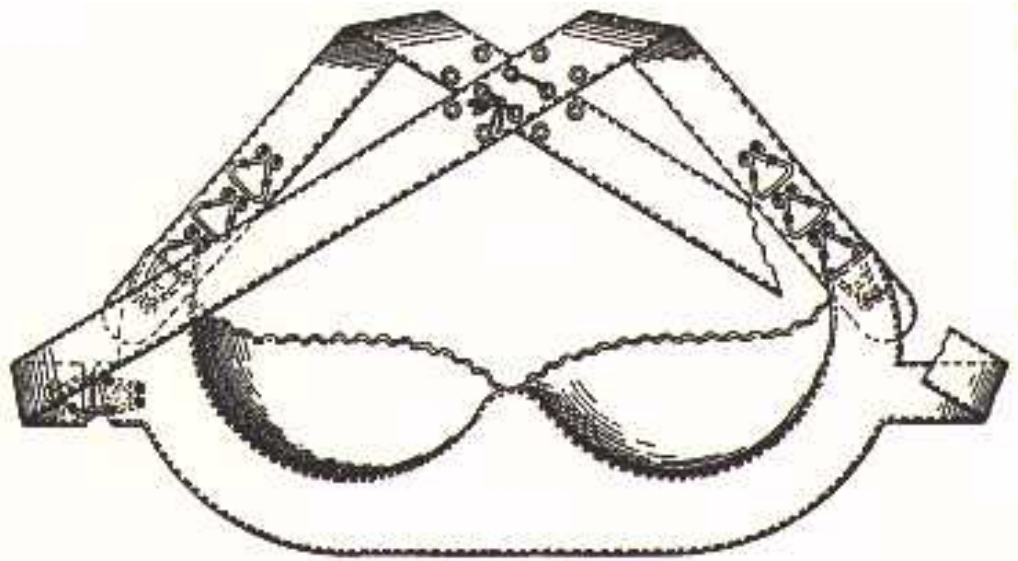


**Innovation & private Entreprise ; T.Govers, 2004**

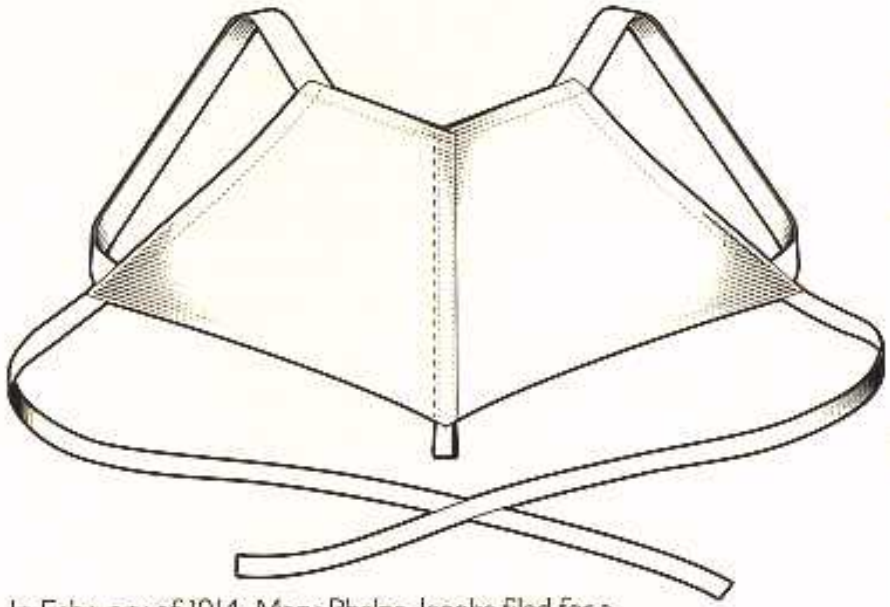
http://inventors.about.com/library/inventors/blrockethistory.htm

**The date reporting the first use of true rockets was in 1232. At this time, the Chinese and the Mongols were at war with each other. During the battle of Kai-Keng, the Chinese repelled the Mongol invaders by a barrage of "arrows of flying fire." These fire-arrows were a simple form of a solid-propellant rocket. A tube, capped at one end, contained gunpowder. The other end was left open and the tube was attached to a long stick. When the powder was ignited, the rapid burning of the powder produced fire, smoke, and gas that escaped out the open end and produced a thrust. The stick acted as a simple guidance system that kept the rocket headed in one general direction as it flew through the air...**

**Following the battle of Kai-Keng, the Mongols produced rockets of their own and may have been responsible for the spread of rockets to Europe.**



Marie Tucek's patented "breast supporter" above would not b
out of place even in today's lingerie shops. No.494,397 (1893)



In February of 1914, Mary Phelps Jacobs filed for a patent on a lighter-weight chest-flattening "brassiere." No. 1,115,674 (1914).



**Innovation & private Entreprise ; T.Govers, 2004**

http://inventors.about.com/library/weekly/aa042597.htm

**World War I dealt the corset a fatal blow when the U.S. War Industries Board called on women to stop buying corsets in 1917. It freed up some 28,000 tons of metal!**

http://inventors.about.com

..By 1932, Fleming had abandoned his work on penicillin. He would have no further role in the subsequent development of this or any other antibiotic, aside from happily providing other researchers with samples of his mold. It is said that he lacked both the chemical expertise to purify penicillin and the conviction that drugs could cure serious infections. However, he did safeguard his unusual strain of Penicillium notatum for posterity. The baton of antibiotic development was passed to others.

..The Oxford team did not stop there. Rushing to meet the needs of World War II, they helped the government set up a network of "minifactories" for penicillin production. Florey also played a crucial role in galvanizing the large-scale production of penicillin by U.S. pharmaceutical companies in the early 1940s. By D-day there was enough penicillin on hand to treat every soldier who needed it. By the end of World War II, it had saved millions of lives.



Innovation & private Entreprise ; T.Govers, 2004

Albert Einstein
Old Grove Rd.
Nassau Point
Peconic, Long Island

August 2nd, 1939

F.D. Roosevelt,
President of the United States,
White House
Washington, D.C.

Sir:

Some recent work by E.Fermi and L. Szilard, which has been communicated to me in manuscript, leads me to expect that the element uranium may be turned into a new and important source of energy in the immediate future. Certain aspects of the situation which has arisen seem to call for watchfulness and, if necessary, quick action on the part of the Administration. I believe therefore that it is my duty to bring to your attention the following facts and recommendations:

In the course of the last four months it has been made probable - through the work of Joliot in France as well as Fermi and Szilard in America - that it may become possible to set up a nuclear chain reaction in a large mass of uranium,by which vast amounts of power and large quantities of new radium-like elements would be generated. Now it appears almost certain that this could be achieved in the immediate future.

This new phenomenon would also lead to the construction of bombs, and it is conceivable - though much less certain - that extremely powerful bombs of a new type may thus be constructed. A single bomb of this type, carried by boat and exploded in a port, might very well destroy the whole port together with some of the surrounding territory. However, such bombs might very well prove to be too heavy for transportation by air.

**The negative side:**
**humans can be extraordinarily innovative when it comes to making war.**

**The positive side:**
**fundamental scientists are capable of highly effective practical innovation when faced with a sufficiently motivating challenge**

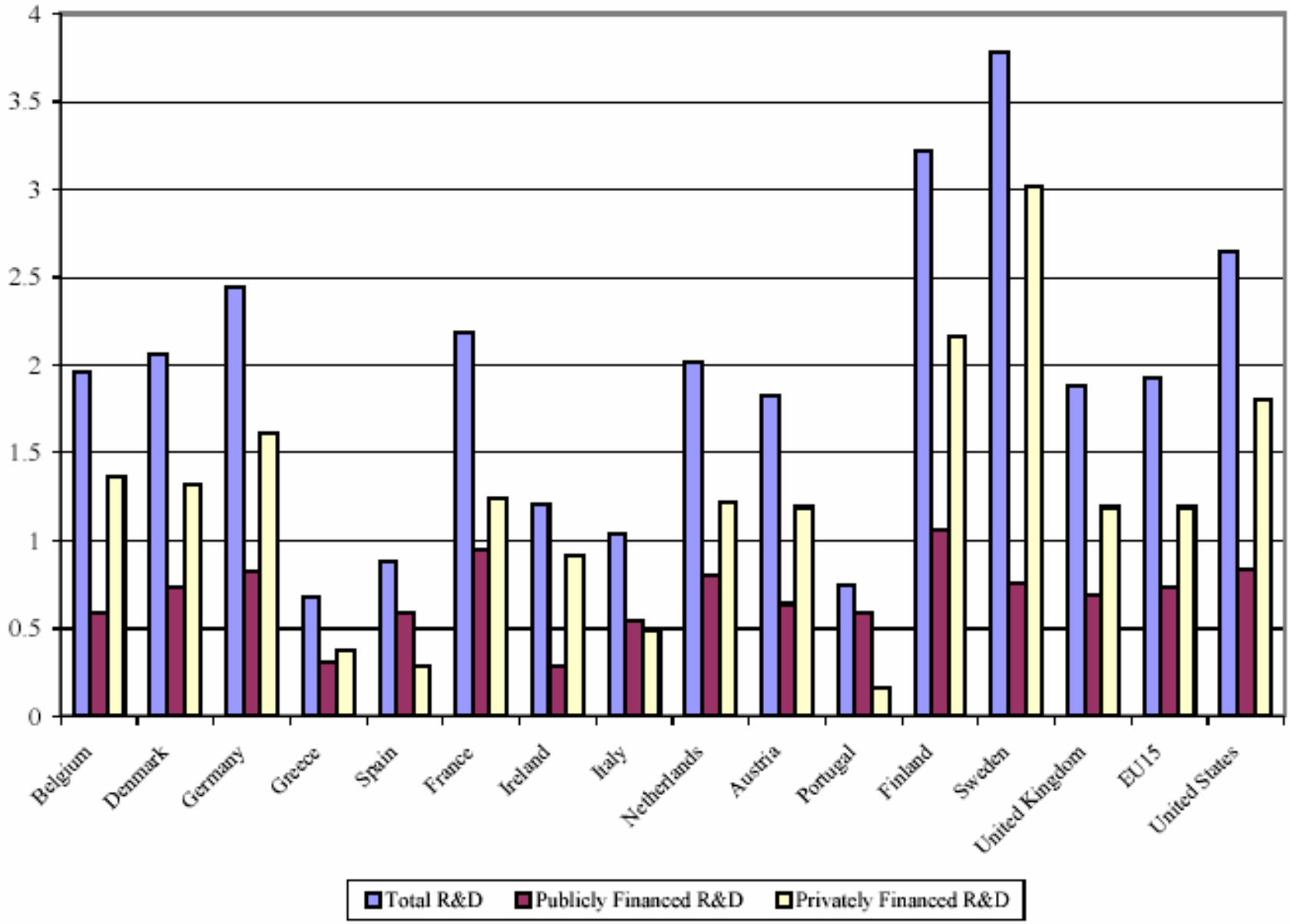


Innovation & private Entreprise ; T.Govers, 2004

The Group views Europe's' unsatisfactory growth performance during the last decades as a symptom of its failure to transform into an innovation-based economy. It has now become clear that the context in which economic policies have been developed changed fundamentally over the past thirty years. A system built around the assimilation of existing technologies, mass production generating economies of scale and an industrial structure dominated by large firms with stable markets and long term employment patterns no longer delivers in the world of today, characterized by economic globalisation and strong external competition. What is needed now is more opportunity for new entrants, greater mobility of employees within and across firms more training, greater reliance on market financing, and higher investment in both R&D and higher education. It requires a massive and urgent change in economic policies in Europe.

"Sapir Report" prepared on the initiative of Mr. Prodi, July 2003

**Figure 4.5 R&D finance by source 1999, as % of GDP** "Sapir Report" to the EC, July 2003






Innovation & private Entreprise ; T.Govers, 2004