Chile Provial 2002

Panorama Mundial de la Conservacion de Carreteras

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November 5, 2002

Topics

- Developing and advanced countries
- Road infrastructure and importance of maintenance
- Roads and economic development
- Some investments have been misallocated
- Importance of timely maintenance
- How to carry out road maintenance?
- Performance-based contracts
- Improving governance (or restructuring road agencies)
- The need to reduce corruption

Developing and Advanced Countries

- Developing countries include low- and middle-income economies
- Advanced (developed, industrial, rich) countries denote high-income economies

Classification of Economies

Economies	GNI per capita
Low-income	$745 or less
Middle-Income	$746 to $9,205
High-income	$9,206 or more

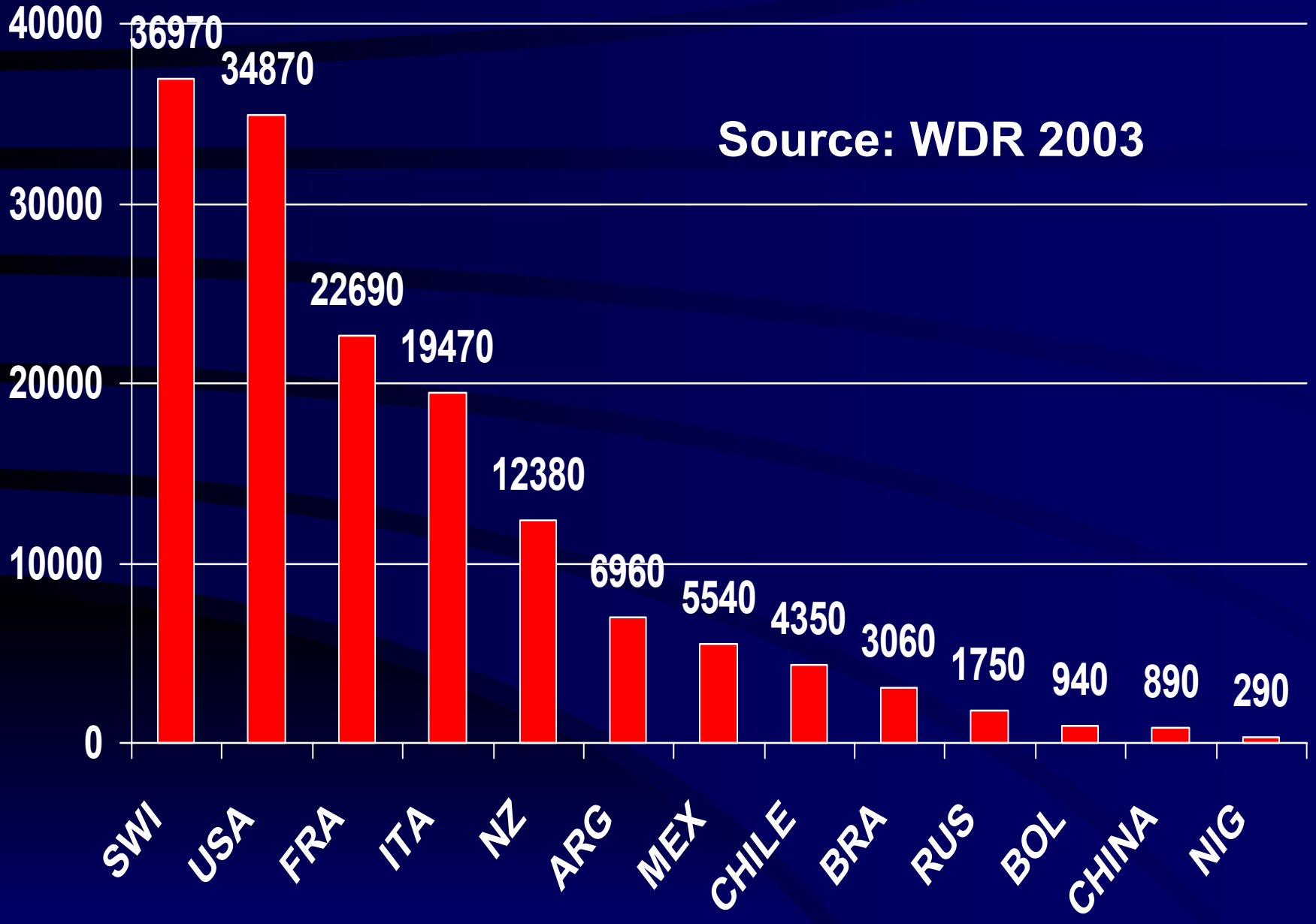
Source: WDR 2003, page 233

World Development Report 2003: Sustainable Development in a Dynamic World

www.worldbank.org

Published in August 2002

GNI per capita ($/pop)



“A society that neglects its infrastructure loses the ability to transport people and food, provide clean air and water, control disease, and conduct commerce.”

U.S. National Science Foundation, 1995

Developing Countries and Infrastructure

- Investments in new infrastructure: $200 billion a year, or 4% of GNP and 20% of total investments
- Increase in infrastructure services--transport, power, water, sanitation, telecommunications, irrigation
- Raises productivity, improves living standards

What is the extent and condition of road networks in developed countries?

GNI of $9,206 or more

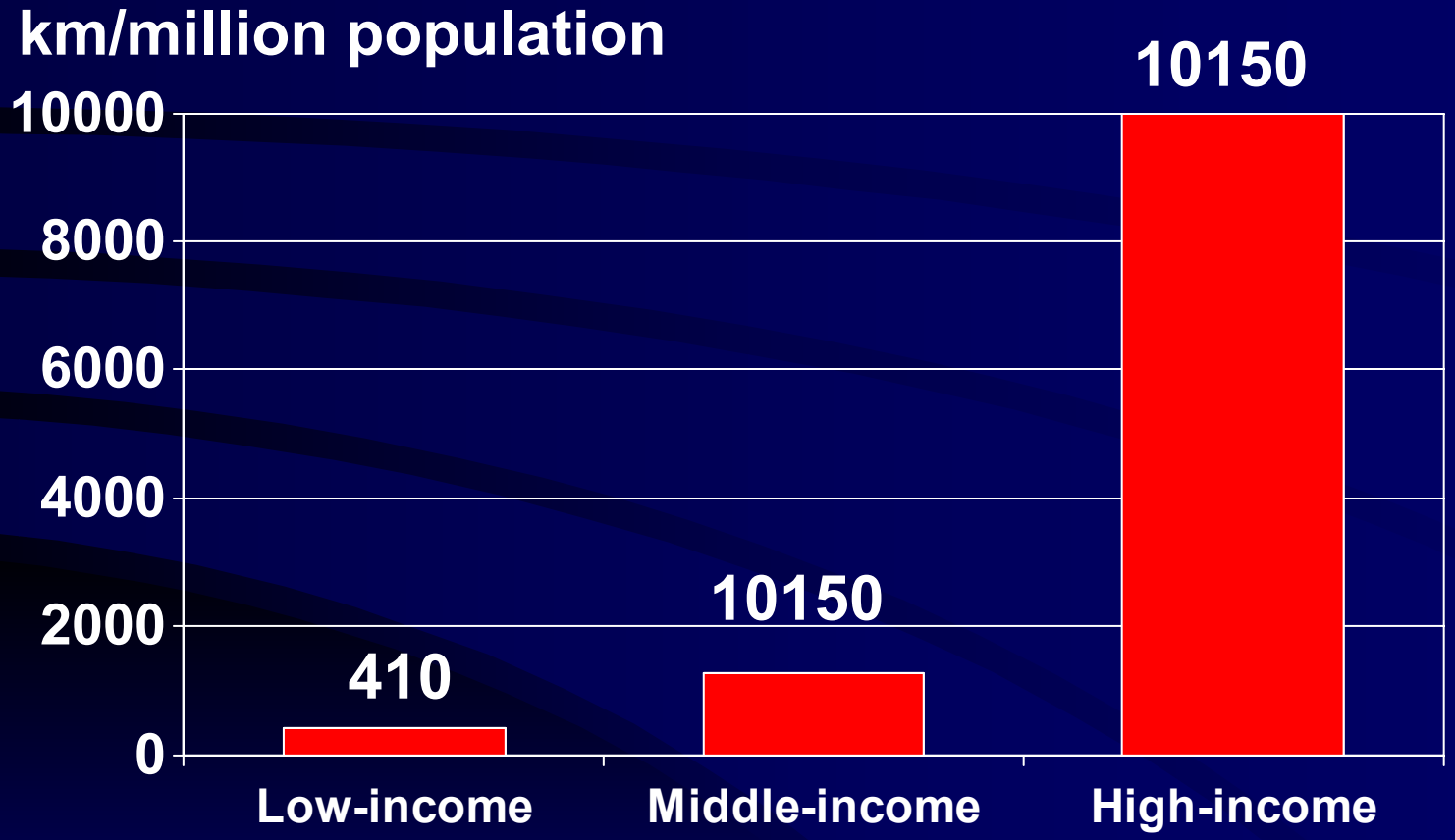
What is the extent and condition of road networks in developing countries?

GNI of $9,205 or less

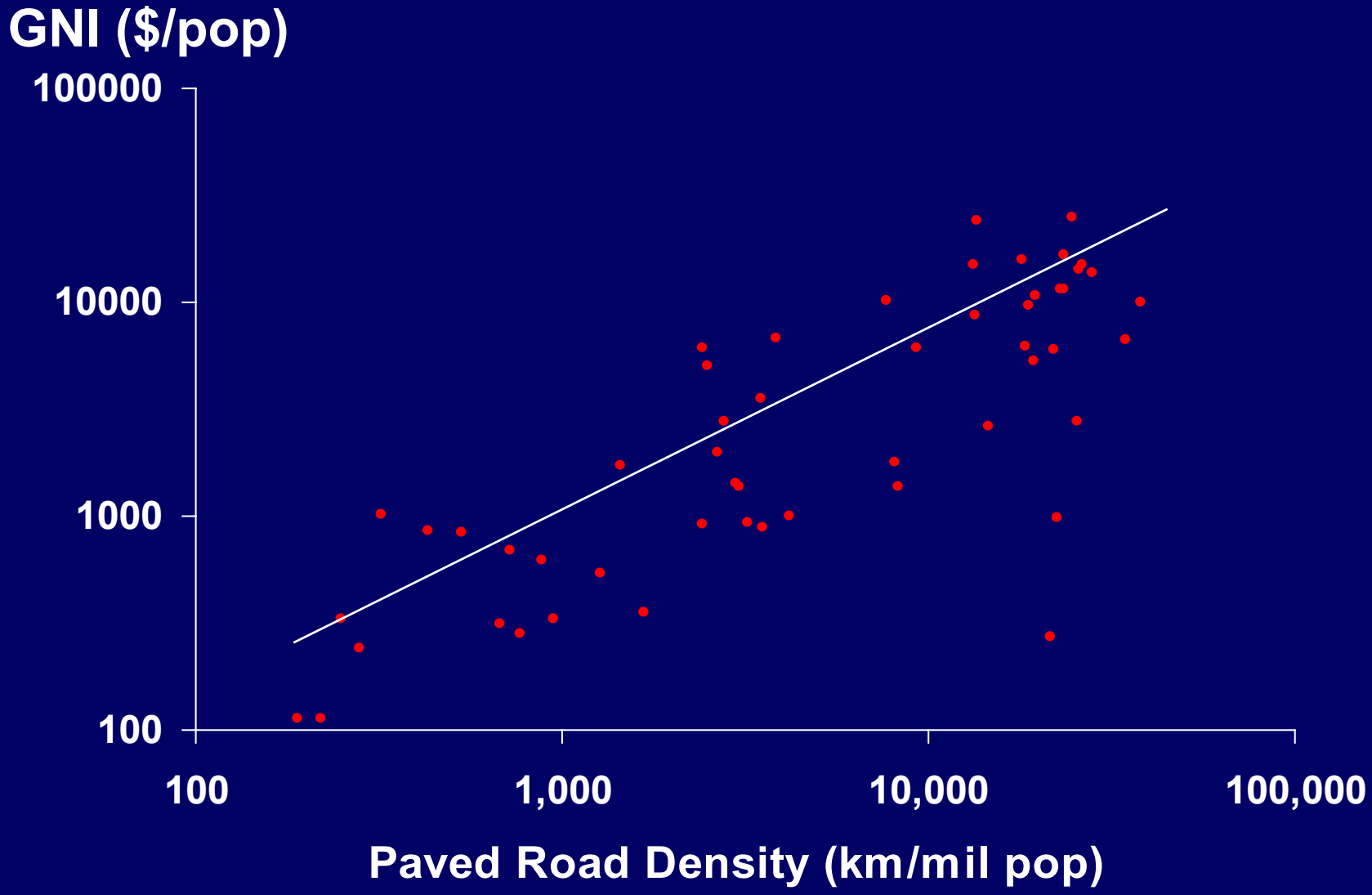
Road Infrastructure and Economies

Economies	PRD (km/mil pop)	PRD in good condition (km/mil pop)
Low-income	410	40
Middle-income	1,280	470
High-income	10,150	8,550

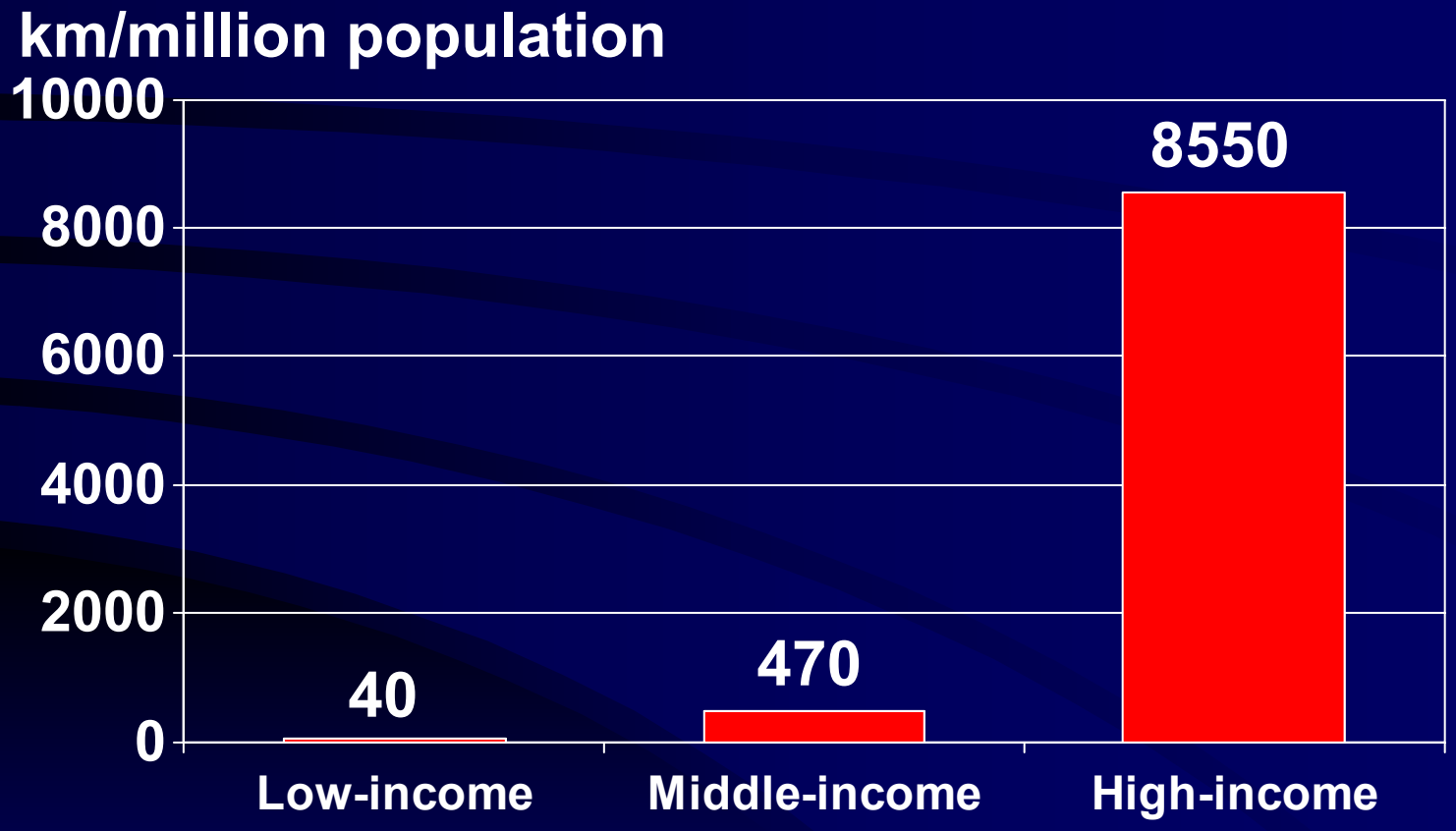
Density of Paved Roads and Economies



Economic Development and Road Infrastructure



Density of Paved Roads in Good Condition and Economies



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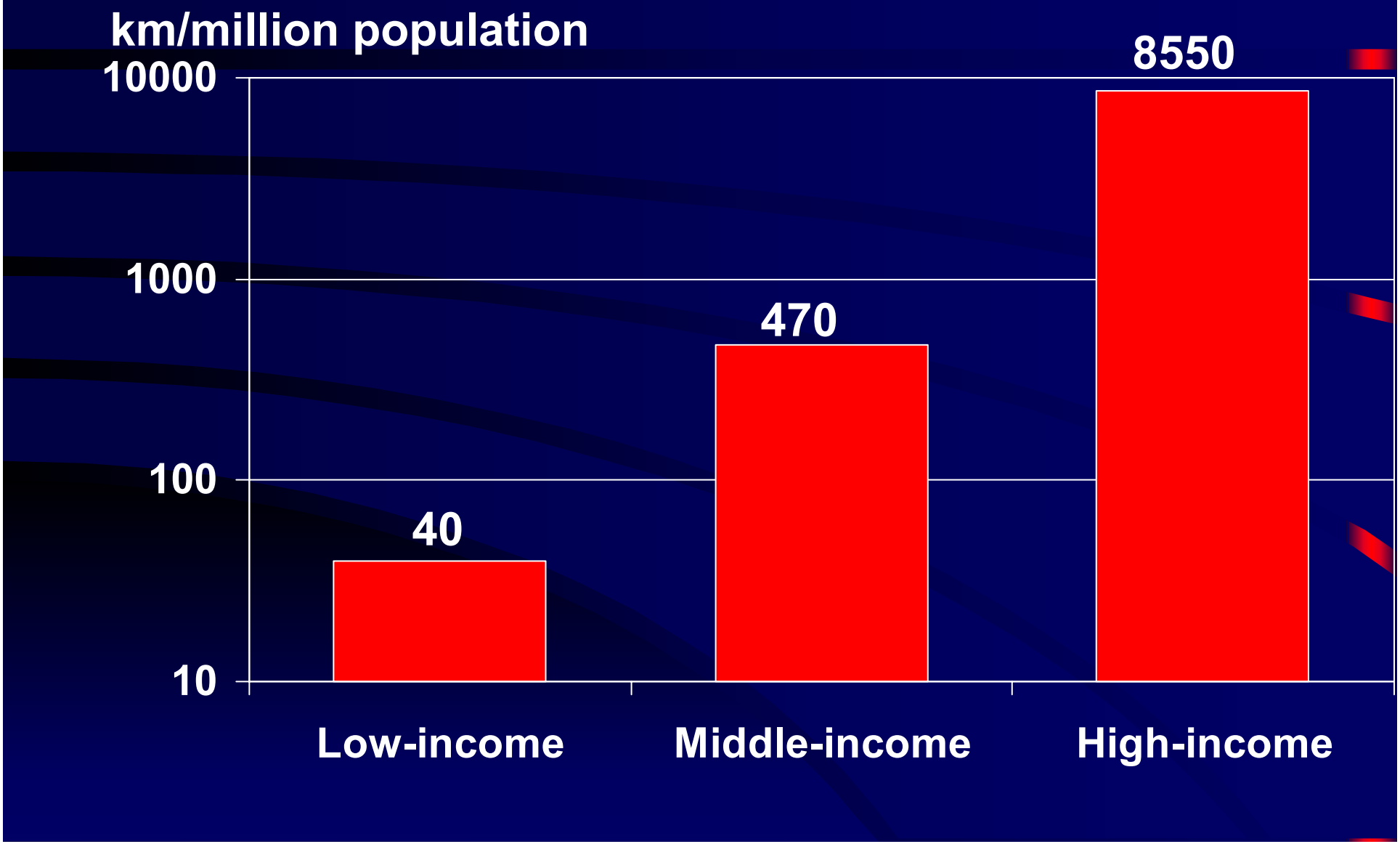
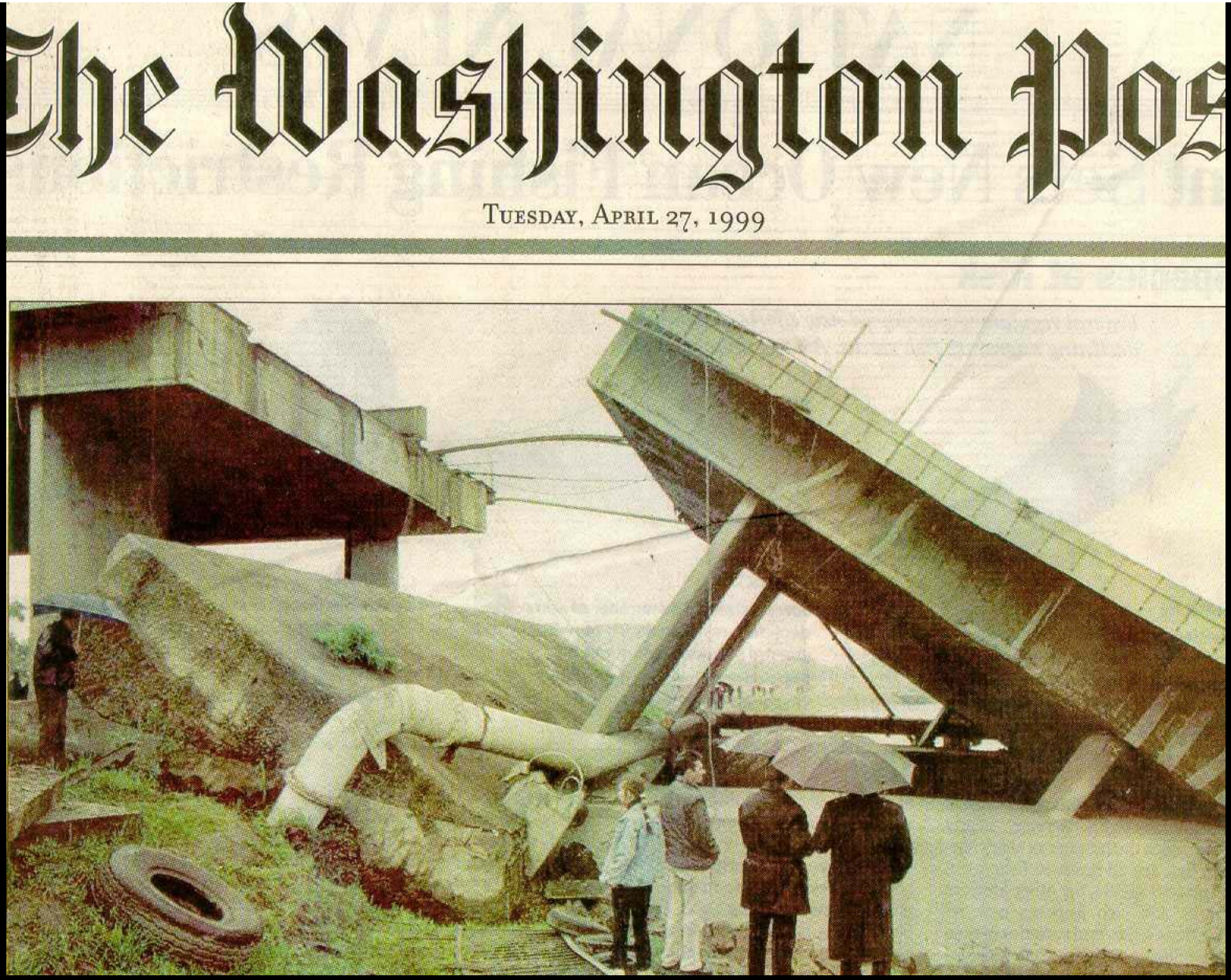




Ruins of a bridge over the Danube River in Novi Sad, Yugoslavia, targeted in a NATO strike in 1999

Some investments have been misallocated

- Too much to new construction or low-priority projects, not enough to maintenance
- Rates of return from road maintenance are about twice those of construction projects
- Technical inefficiency and outright waste in carrying out maintenance

A bituminous overlay on BR-040 in Brazil

Inefficient and polluting equipment still used


ОПАСНО!
УЗКИЙ МОСТ
6 м
20
15
20

Moscow to Saint Petersburg 1994

Moscow to Yaroslavl 1992

Importance of timely maintenance

- Timely maintenance of $12 billion could have saved $45 billion needed for road reconstruction in Africa
- A well maintained paved road should last for 10 to 15 years before resurfacing, but lack of maintenance can lead to severe deterioration in 5 years


CAUTION
POTHOLES
ksr/c/s53978


TG 05 68


ONE MAN
CONTRACTOR
Akomadan-Kumasi Rd.
P.O. Box 14

Albania: Shkodra - Kukes Road, October 2002

Albania: Shkodra - Kukes Road, October 2002

A potential black spot following maintenance works: Puke- Fushe Arrez Road, Albania, September 2002

How should a road administration carry out the maintenance of its road network?

Evolution in the Execution of Civil Works

1. Force account (or direct labor)
2. A public sector monopoly (public contractor)
3. Corporatized public sector contractors
4. Private sector contractors

Contracting out civil works is closely related to:

- Pavement management systems
- Bridge management systems
- ...
- Asset management systems

AMS Activities

Network Level	*Project Level*
Planning	Design
Programming	Construction
Budgeting	Maintenance

Database

Research

Communications

Separating planning and management from implementation of road maintenance

- Avoid conflicting responsibilities
- Control costs and maintain quality
- Introduce competition and reduce costs, frequently 20% to 30%

Forms of contract

- Price-based contracts
- Cost-reimbursable contracts

Forms of price based contracts

- Lump sum - payment based on a single price for the total work
- Admeasure - payment based on quantity of completed work and tendered rates (bill of quantities)
- Performance - payment based on performance (or results) achieved

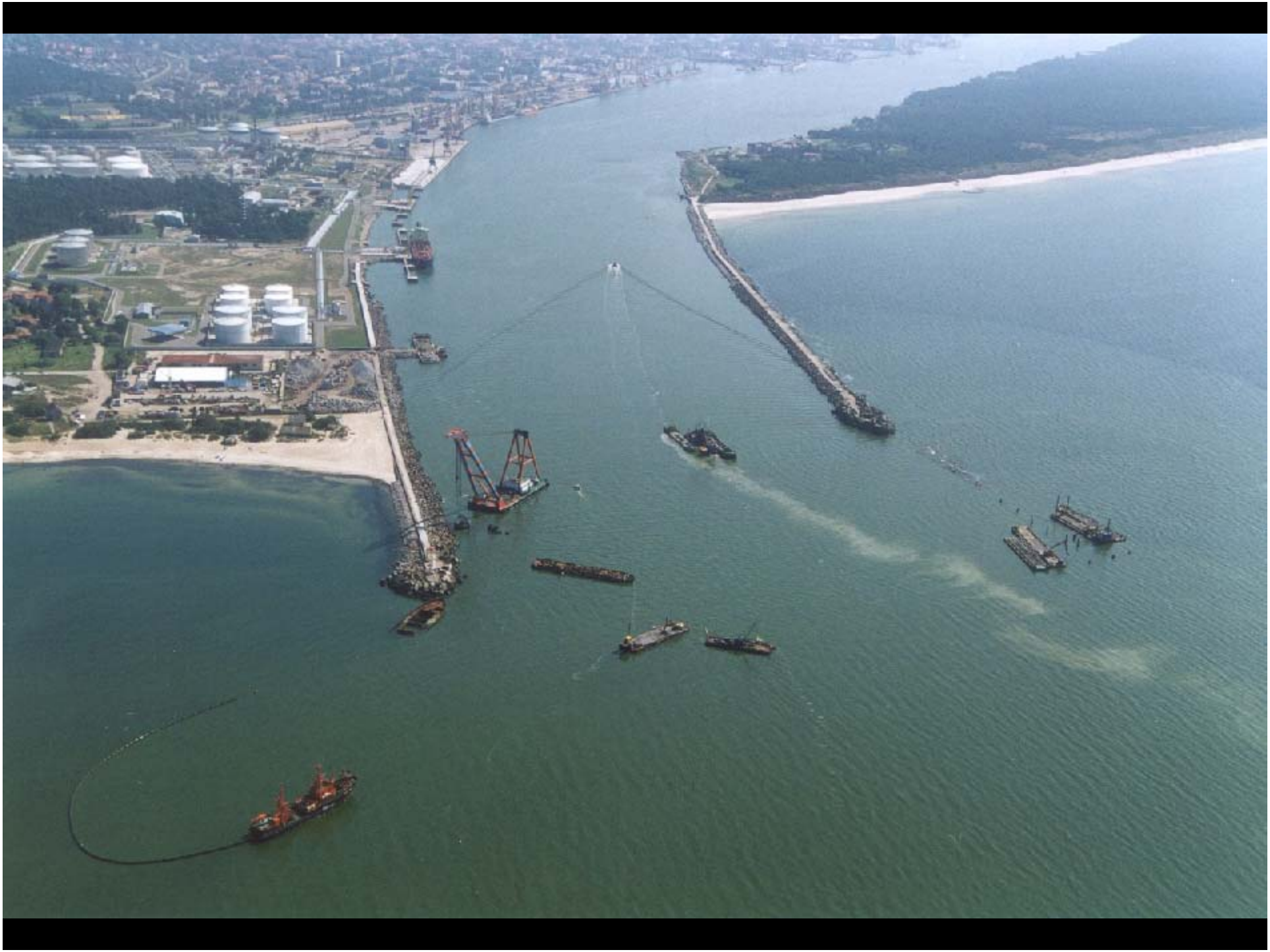
Possible Guidelines for Maintenance Contracts

- Type of payment: unit price, lump sum, or a combination
- Type of specifications: performance based, procedural, or a combination
- Contract duration: 1 to 30 years
- Incentives and disincentives can provide for better contract execution

Source: AASHTO 2001

Risk allocation between client and contractor

- Lump sum, admeasure and performance contracts: contractor bears much of the risk
- Cost-reimbursable contracts: client bears the main risk
- Most agencies favor admeasure contracts



Why performance-based contracts?

- Less effort to measure works
- Avoid frequent claims and contract amendments
- Client focus: pay on the basis of user-related performance indicators
- More responsibility to contractors stimulates initiative and innovation

Examples of performance standards

- Road maintenance: No potholes; complete and clean road signs; no obstruction to drainage systems; maximum acceptable roughness
- Maintenance dredging of ports: minimum depth kept at all times

Experience with performance based contracts for roads

- Australia, New Zealand, Canada, USA have let 5 to 10-year performance contracts
- Routine and periodic maintenance can be contracted separately (e.g., Estonia) or combined (e.g., Argentina, Australia)

UK long-term performance contracts

- 30-year for roads requiring major rehabilitation or new investments
- payments indexed to traffic flows, the contractor being paid through shadow tolls

More details on Thursday...

Change is not easy...

Key Steps for Improved Governance

- Better records, analysis of expenditures and traffic on each section of network, studies, audits
- Study of roads to be concessioned
- Convincing public opinion: quality, costs
- Reliable legal, fiscal, administrative framework
- Transparent and reliable procurement process
- ...

Key Steps for Improved Governance

- ...
- Clear strategy - priority for maintenance
- Separate administration from construction and maintenance works
- Economic analysis in decision making
- R&D: Use of new technologies (e.g., ITS, materials, design methods)

Expected Results from Improved Governance (Restructuring)

- Improved quality and road safety
- Reduced costs - more funds for network improvement/development; more funds for other (e.g. social) spending; more competitive local industries; deeper international integration
- Sustainability through road users charges

Asset condition depends on budget, human and technical resources, organization, governance

Corruption

- Is the “abuse of public power for private gain” (World Bank 1997 World Development Report)
- Has social and economic costs to a country, the burden of which is greater for the poor

Indicators of Possible Collusion

- identical or similar bid prices for a contract
- same supplier gets particular kind of contracts
- prices charged are greater than market

Corruption Perceptions Index (CPI)

- Transparency International and Goettingen University
- Scores (CPI): 0 (corrupt) to 10 (clean)
- Perceptions of corruption, not necessarily the real level of corruption

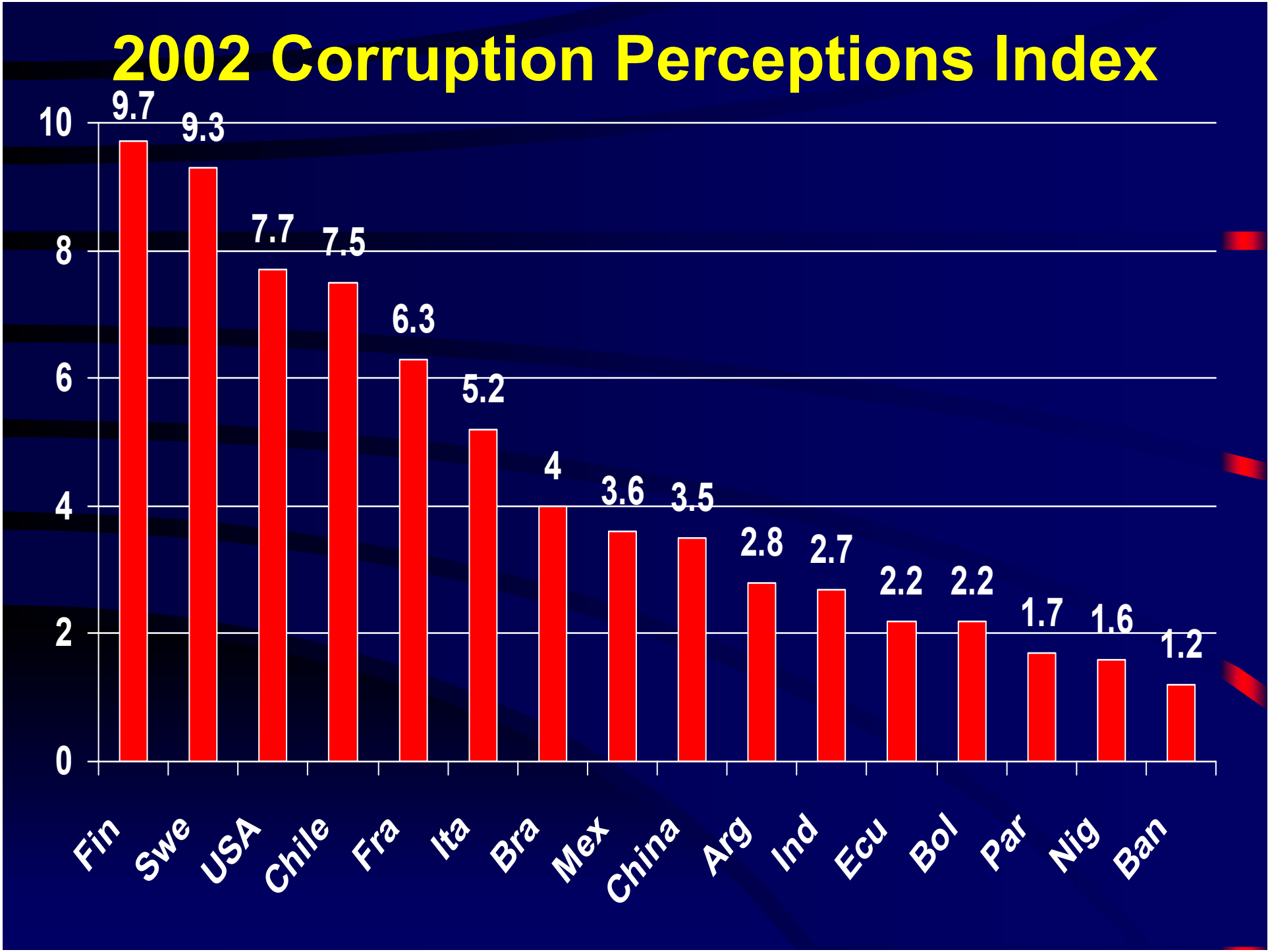
Where can I find the CPIs?

Available for 102 countries at:

www.gwdg.de/~uwvw/

http://www.transparency.org

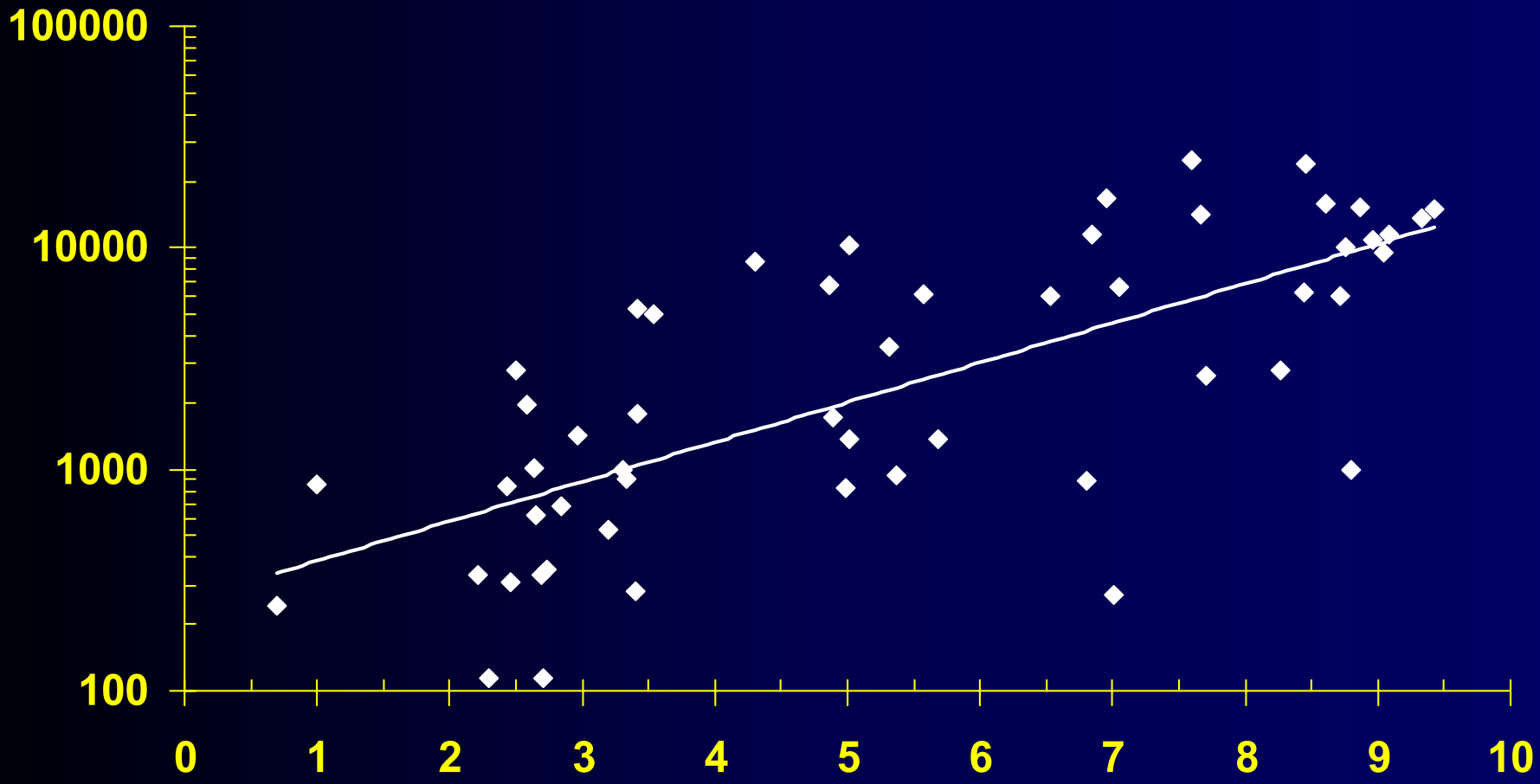
2002 Corruption Perceptions Index



Economic Development, Infrastructure and Corruption

Economy	PRD km/mil pop	CPI
Low-income	170	2.1
Middle-income	1,660	4.1
High-income	10,110	7.7

Paved Road Density (km/mil pop)



Source: Queiroz and Visser 2001


Union de Banques Suisses
GARE DE
CORNAVIN
Union de Banques Suisses
S
UBS
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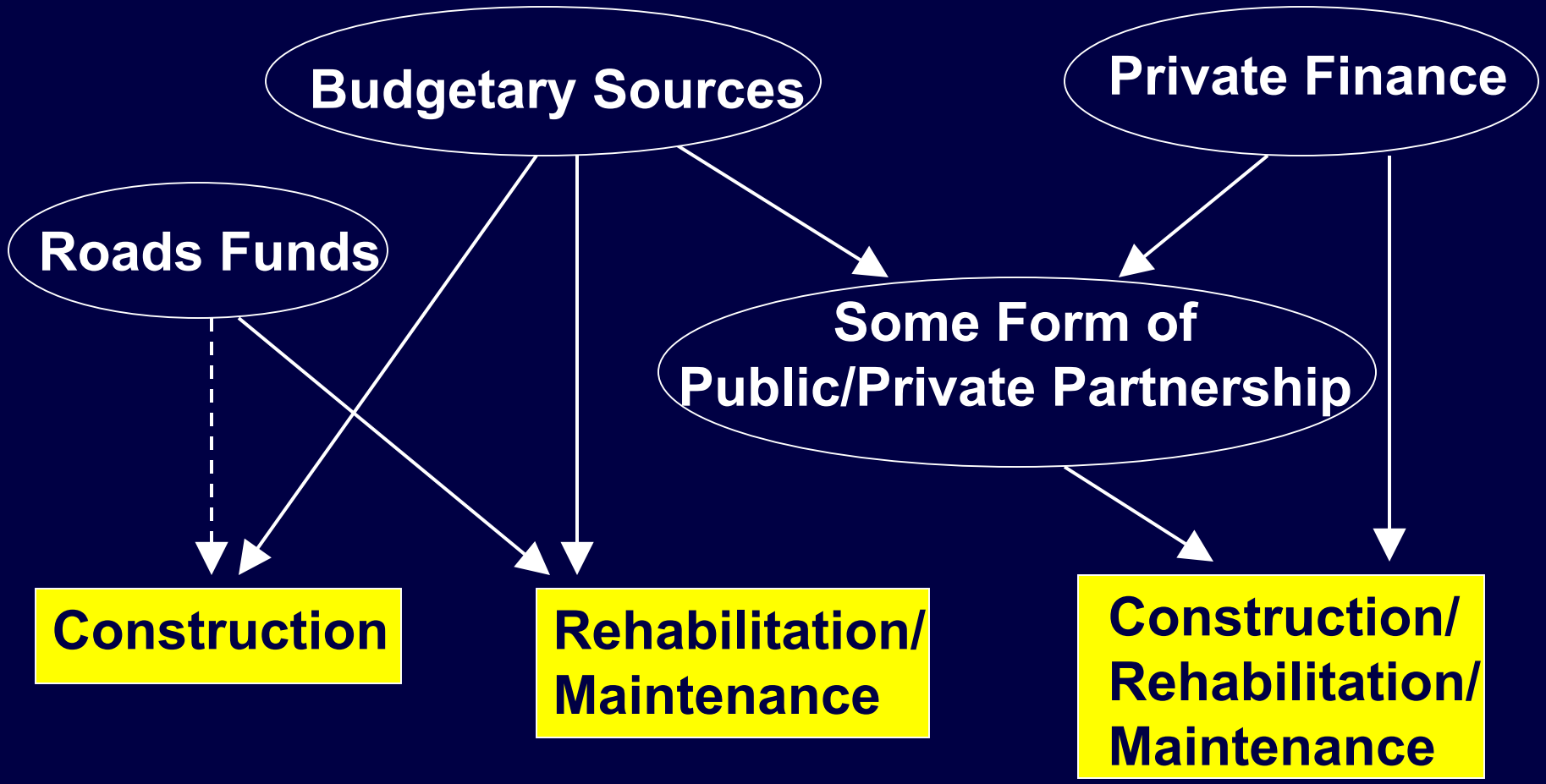
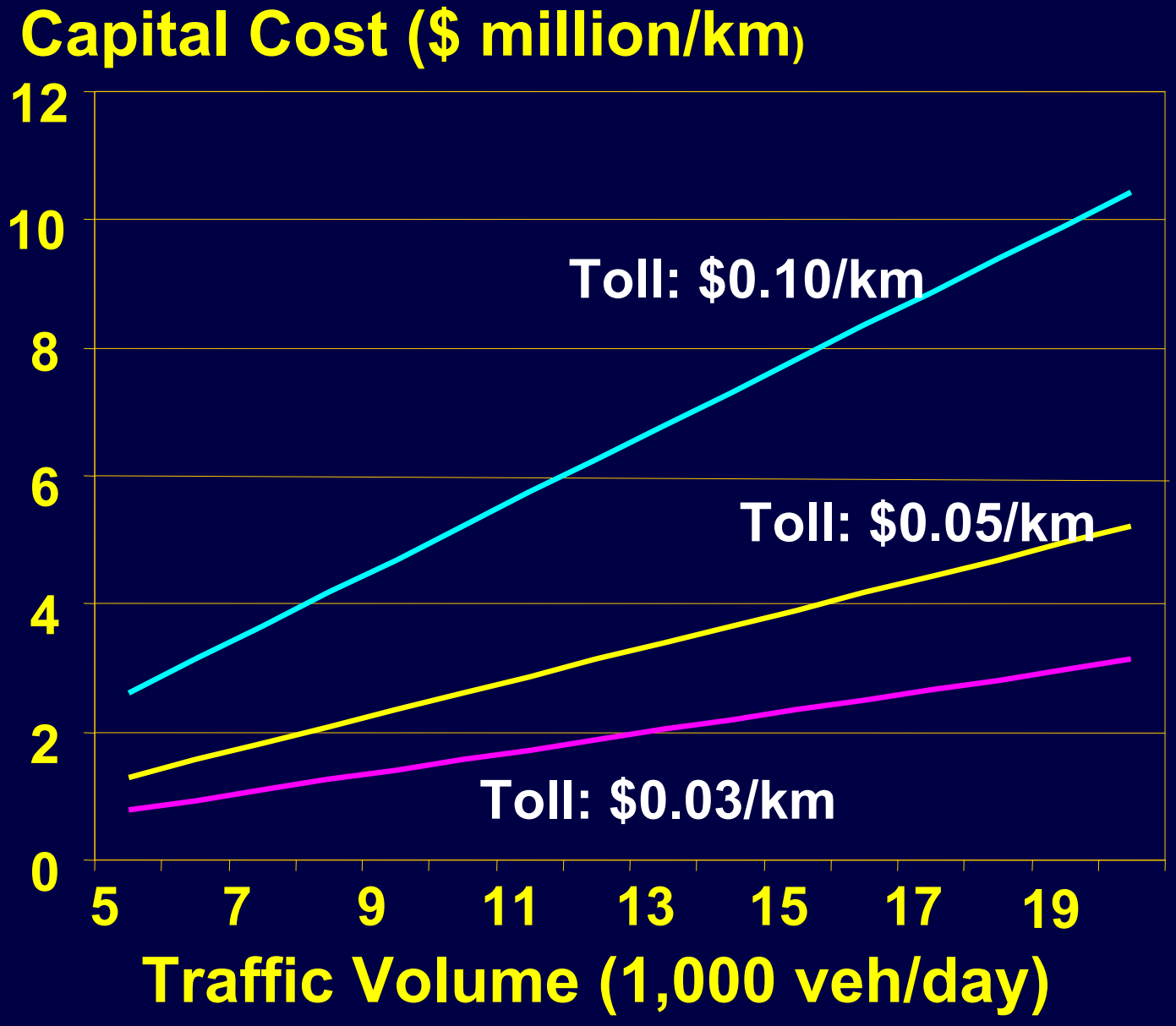
Alternative Methods for Financing the Roads Sector



What is Financially Feasible?



Backup at Toll Plaza

Bay Bridge toll booths, beach-bound traffic

August 1999

World Bank Toolkit for PPP in Highways

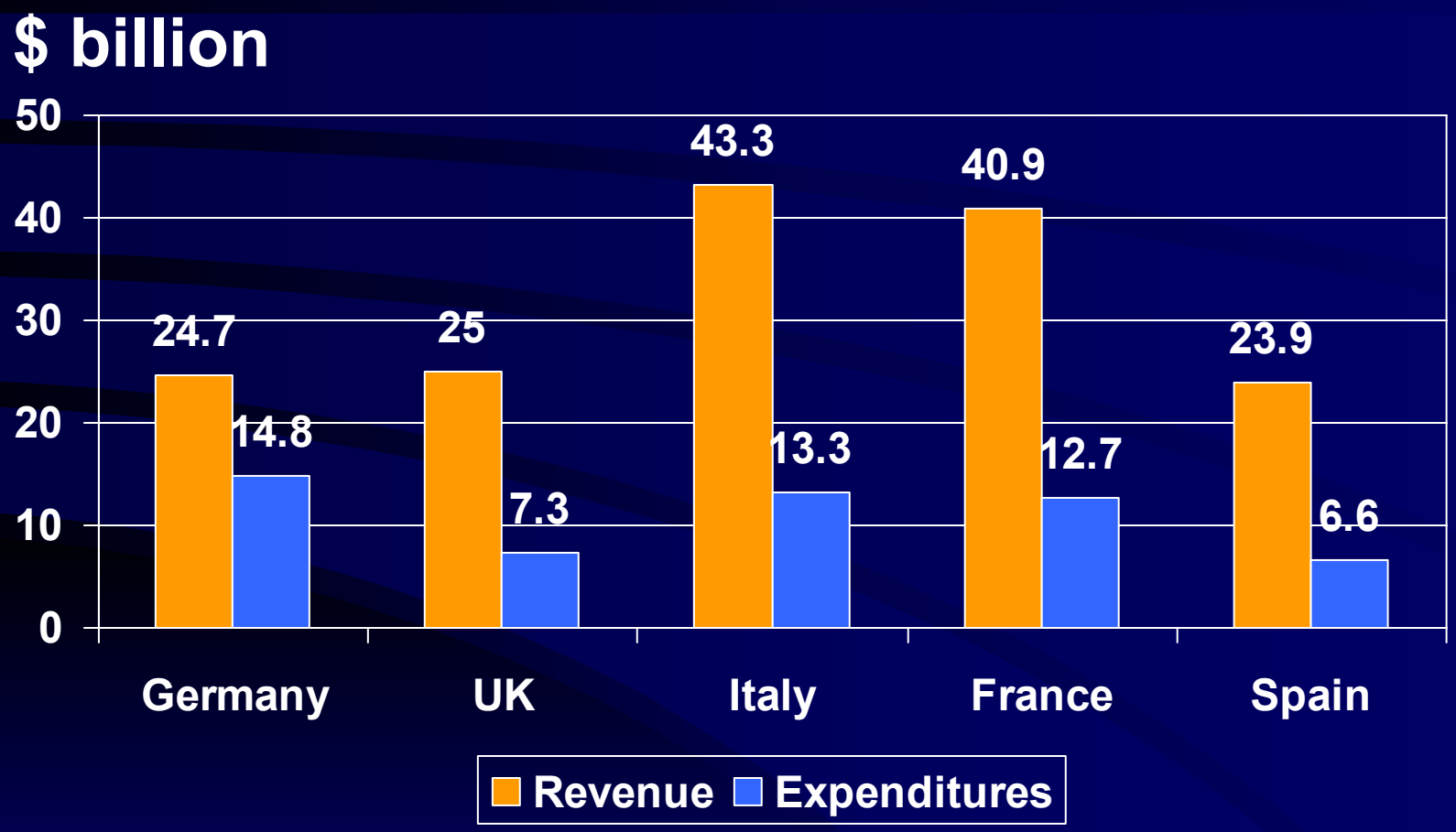
- Helps policy makers and practitioners to develop Public-Private Partnerships (PPP) in the highway sector
- a multimedia product available on a CD ROM and Web at http://test.triel.com/bm/

More details on Thursday

Users are to pay!

- Vehicle taxes
- Excise duties
- Tolls/vignette
- Extra charges for heavy vehicles
- Transit fees

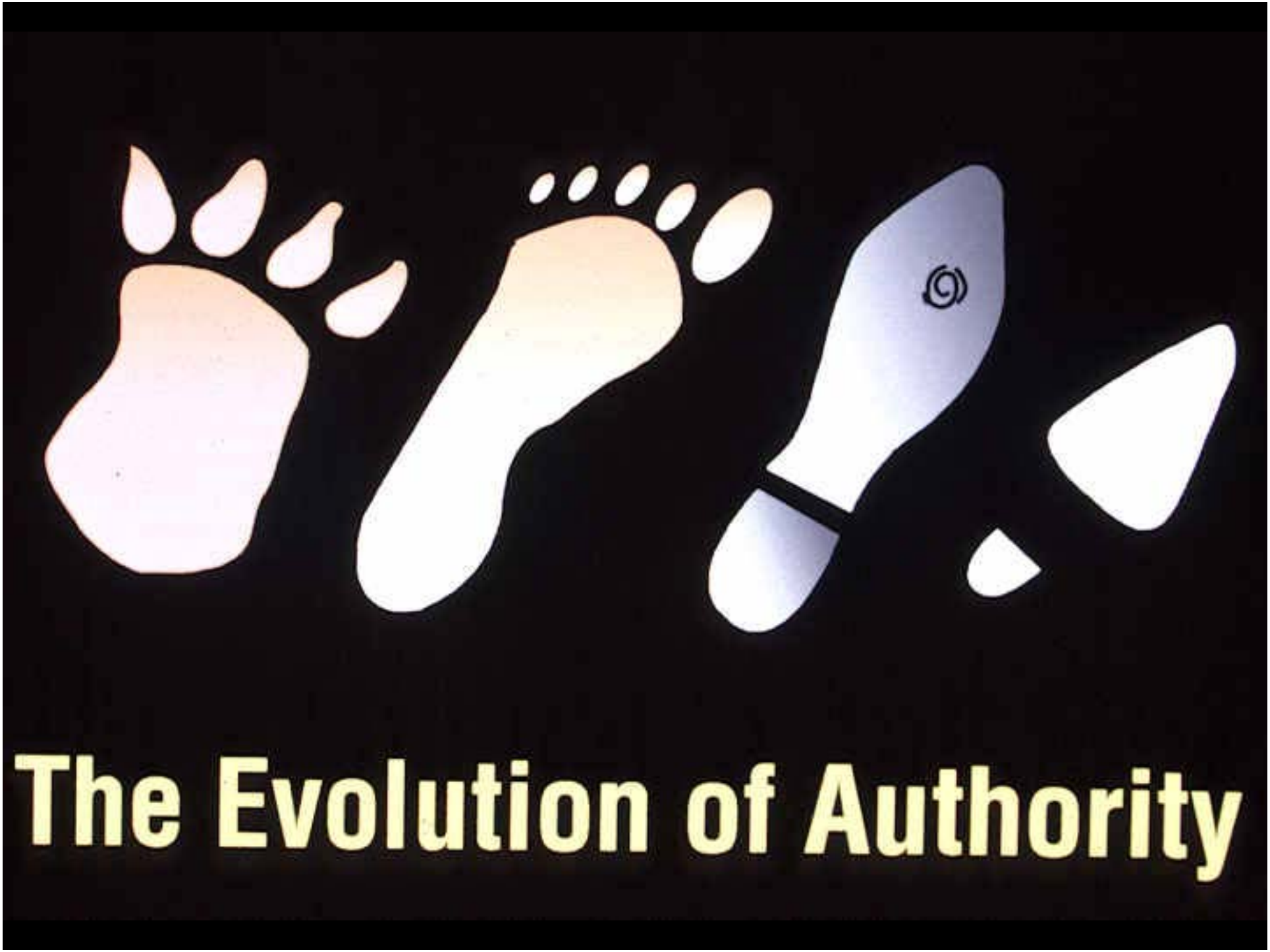
Revenue from Users and Road Expenditures



Source: Bousquet & Queiroz 1996

Some Policy Implications

- Infrastructure is essential for economic development,
- then sufficient resources should be made available to maintain and expand a country's infrastructure.
- Private sector participation can help,
- and corruption has to be curbed.


The Evolution of Authority

Muchas Gracias!

Definition of PPP

A Public-Private Partnership (PPP) constitutes a sustained collaborative effort between the public sector (government agencies) and private enterprises to achieve a common objective (e.g., a road or port project)

Why private participation?

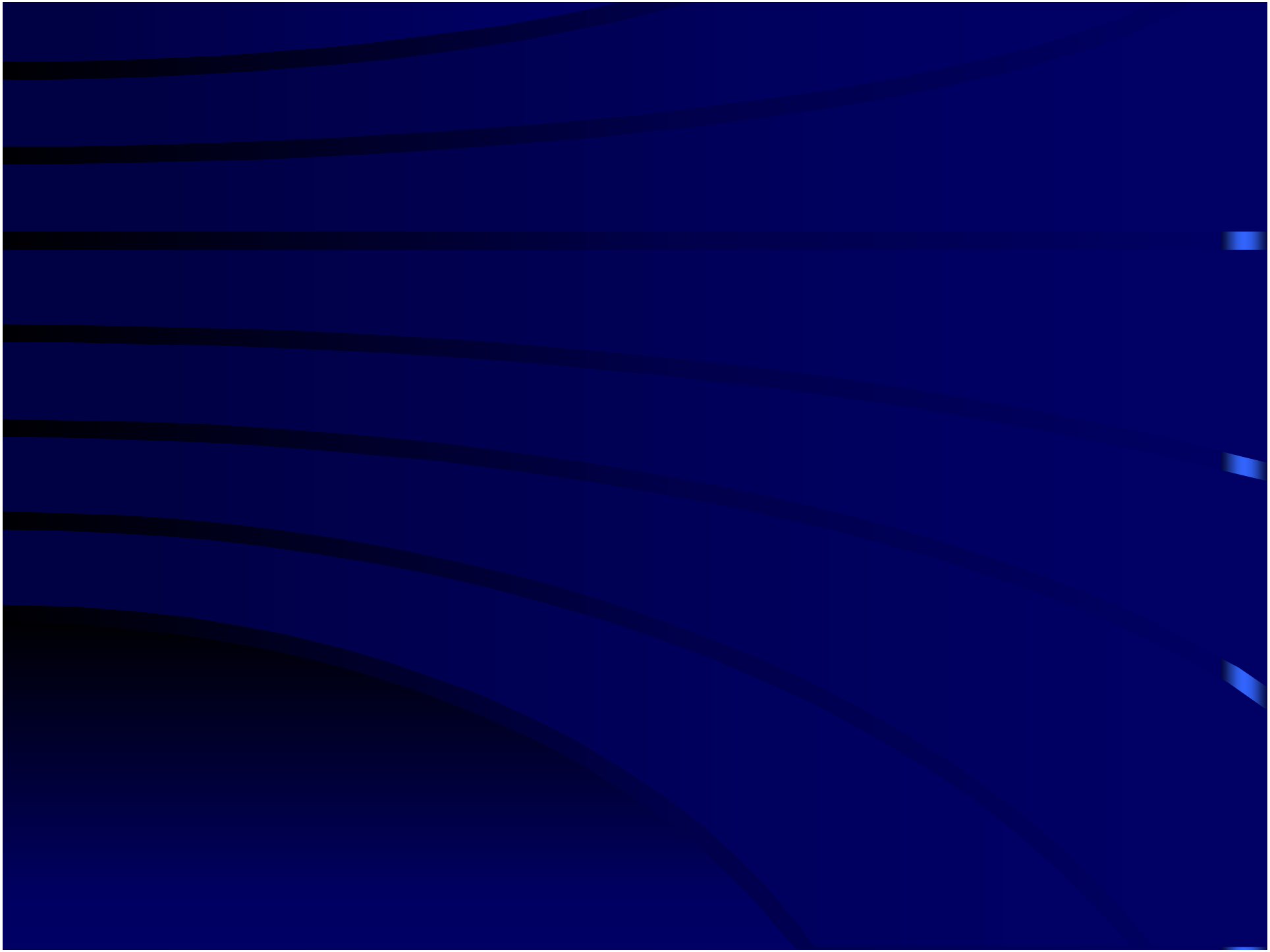
- Increased efficiency in the provision of services
- Avoidance of political interference
- Circumventing public sector budget constraints
- More flexibility, comprehensive approach
- Access to technology
- Wage increase or promotion to productive workers
- Dismissal of inefficient workers

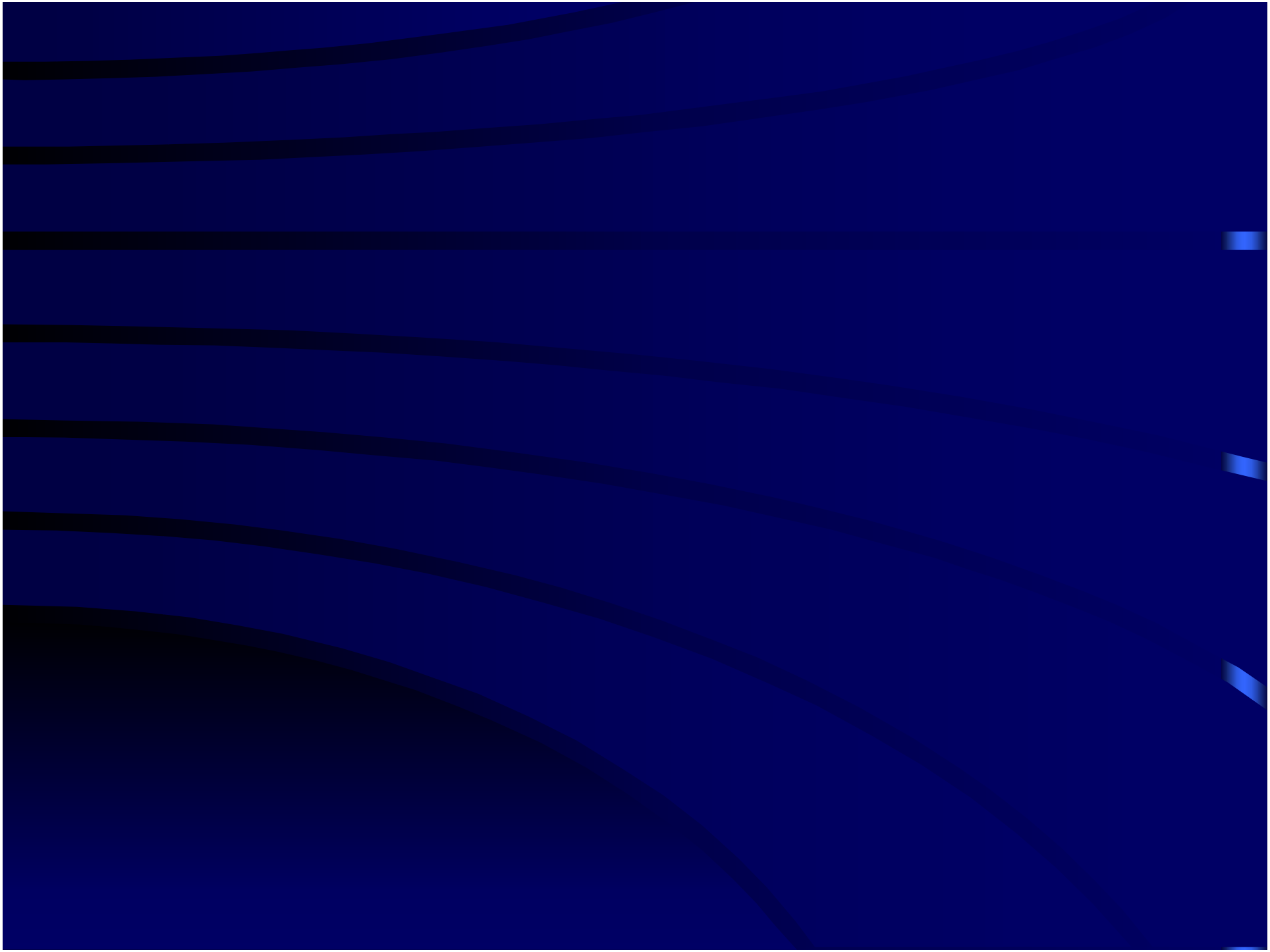
Historical Overview

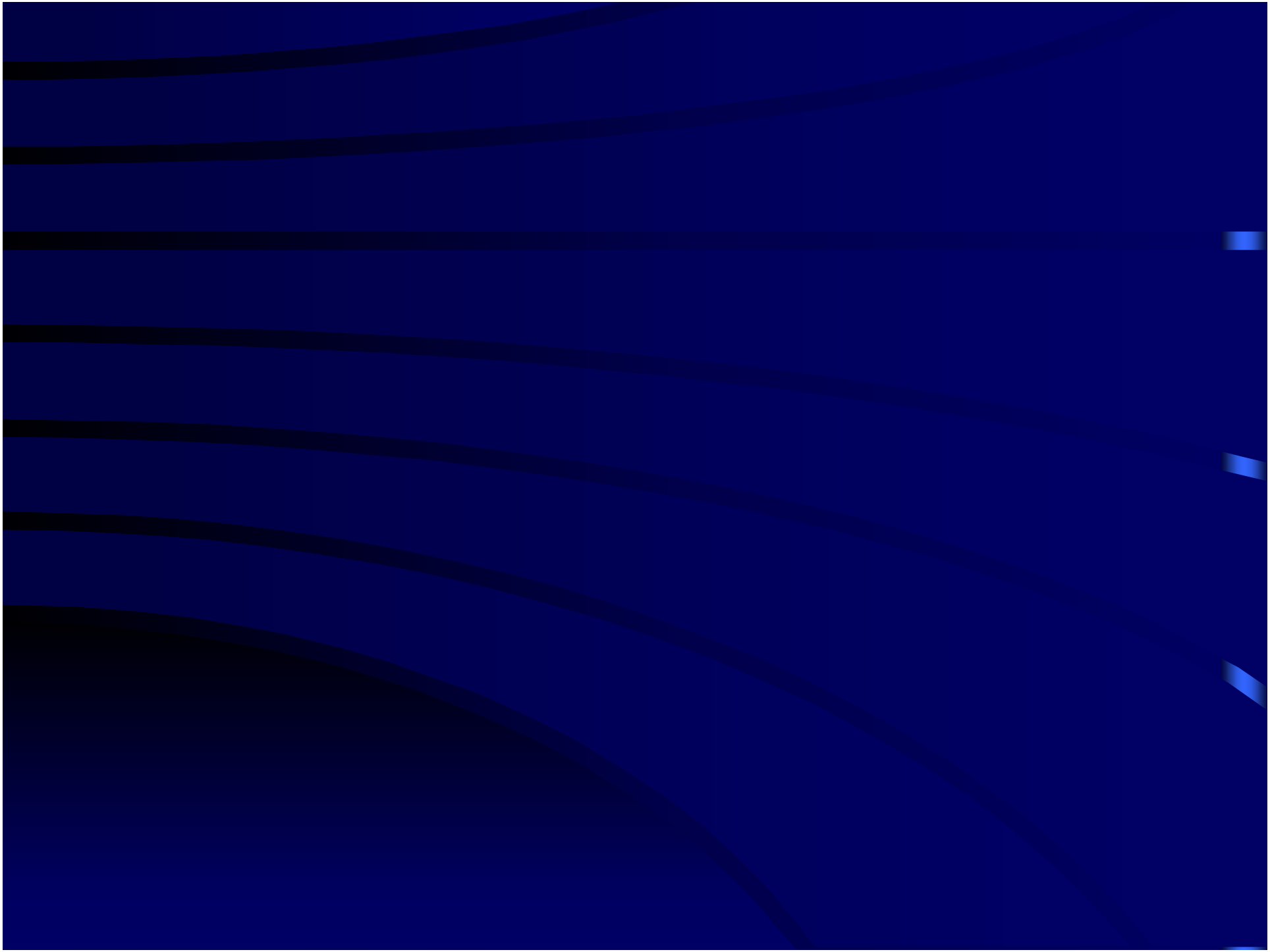
- Paris, 1782: Brothers Perrier
- 19th century concessions: roads, bridges, tunnels in US; railways in France; subway in London
- Suez (1860) and Panama (1880) canals
- Decline around 1930 (great depression)
- Resurgence in the 1980s: collapse of the state-owned monopoly paradigm

Risk Allocation

- Government: Expropriation, currency inconvertibility and nontransferability (political risks)
- Investor: construction costs, demand, exchange and interest rates (commercial risks)







Effect of an overloaded sugar cane truck

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Georgia O’Keeffe

Ladder to the Moon

1958