

Canadian Productivity: What is the Problem?

M.C. McCracken, CEO
Informetrica Limited
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Outline of Points

- What is Productivity?
- How does it Relate to other Concepts?
- Harberger and Real Cost Reductions
- What Matters?
- Do What?
- How are We Doing?

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Essentially, productivity is a ratio of outputs to inputs, each in some real sense such as tons of steel (an output) per production worker (input).

Other examples:

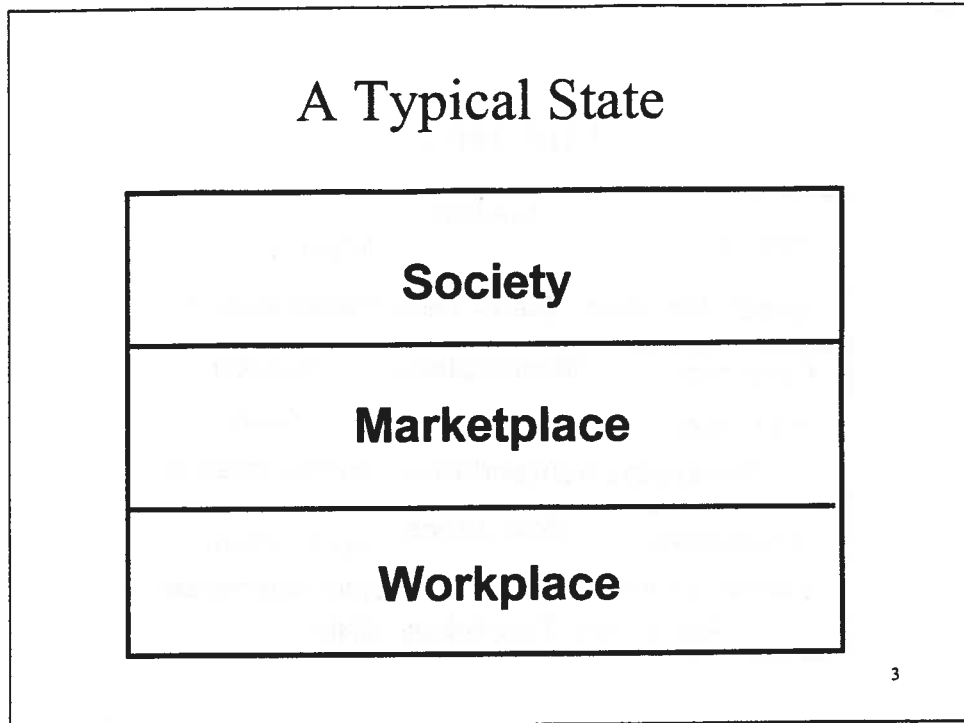
A symphony performance relative to the inputs of the concert hall, the musicians, the conductor, and the attention of an audience.

Decisions on UI programs (an output) over the inputs (research base, consultations, political debate, etc.)

Sausage (an output) relative to inputs of the butcher, equipment services, and the “animals”.

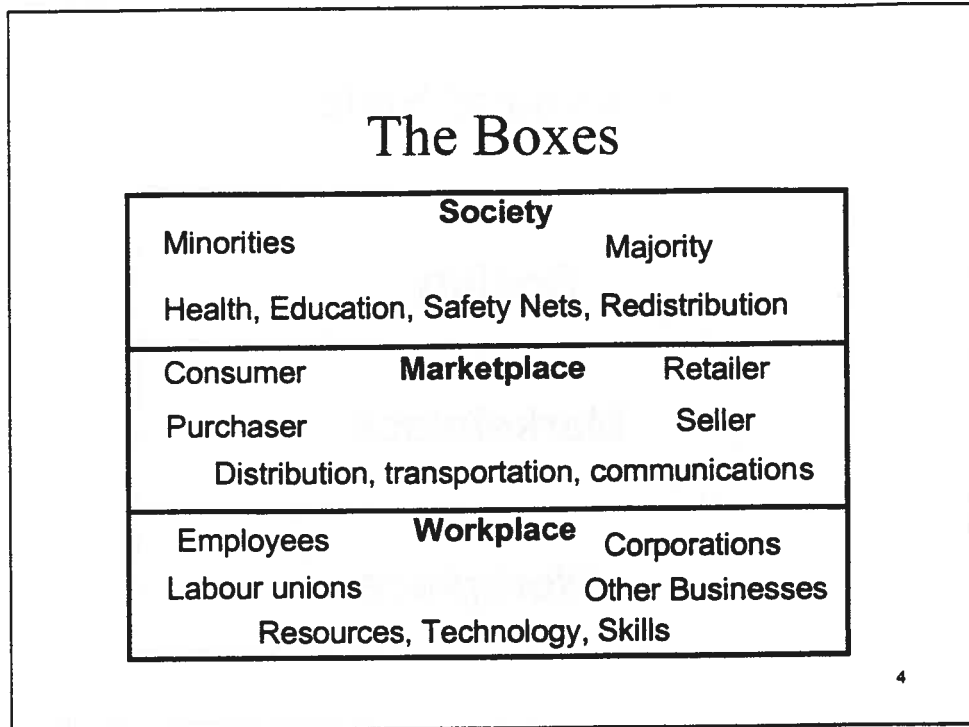
(The last two may be related.)

Quite quickly, complications can arise. Hence we tend to use “constant dollar” inputs and outputs to allow the aggregation of each.



- Any state can be thought of as a set of stacked boxes.

- **Workplace** - Firms combine labour, capital, technologies, resources and management to produce goods and services. (Unit is the worker or firm.)
- **Marketplace** - Goods and services are bought and sold, prices signal relative demand and supply. Inputs used by the workplace may be traded here. (Unit is a "transaction" or a market for a particular item.)
- **Society** - The people: quality of life, family, culture, education, participation. (Unit is a person or group in society.)



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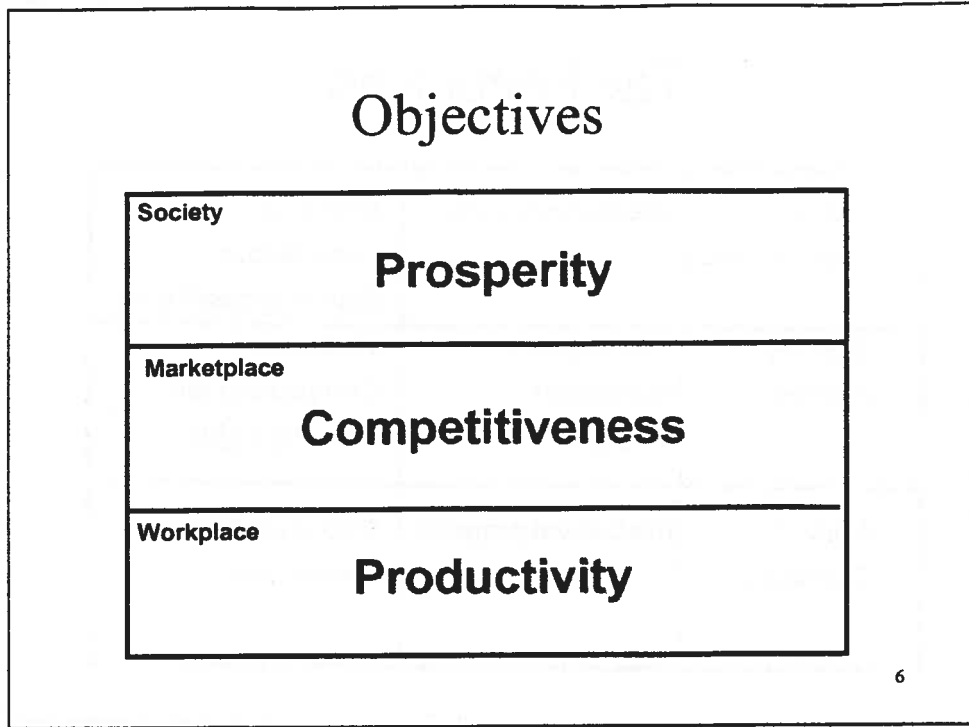
Inside each box, one finds :

- People
- Businesses and other organizations
- Transactions
- Resources

The Framework

Tradition	External	The State
Caring Trust of state	International norms	Individual rights Constitution State responsibilities
Honesty Service	International agreements Standards	Contracts Competition law Property rights
Work ethic Discipline	Intellectual property	Corporate laws Labour laws

- The sides of the three stacked boxes are determined by:
 - Tradition, The laws of the state, External influences
- Thus the marketplace is "framed" by the laws defining private property, laws of contracts, coupled with the societal norms of voluntary buy/sell decisions
- Any state will be a blend of elements that will affect change:
 - Traditional - social, political, technological norms of the society (inertia, continuity)
 - Command - authority, enforcement, management (set direction or change it for society)
 - Market system - autonomous decisions, prices, consumer "choice" (dynamism, innovation, continuous change)
- This last element is the essence of economics and the necessary condition for capitalism.



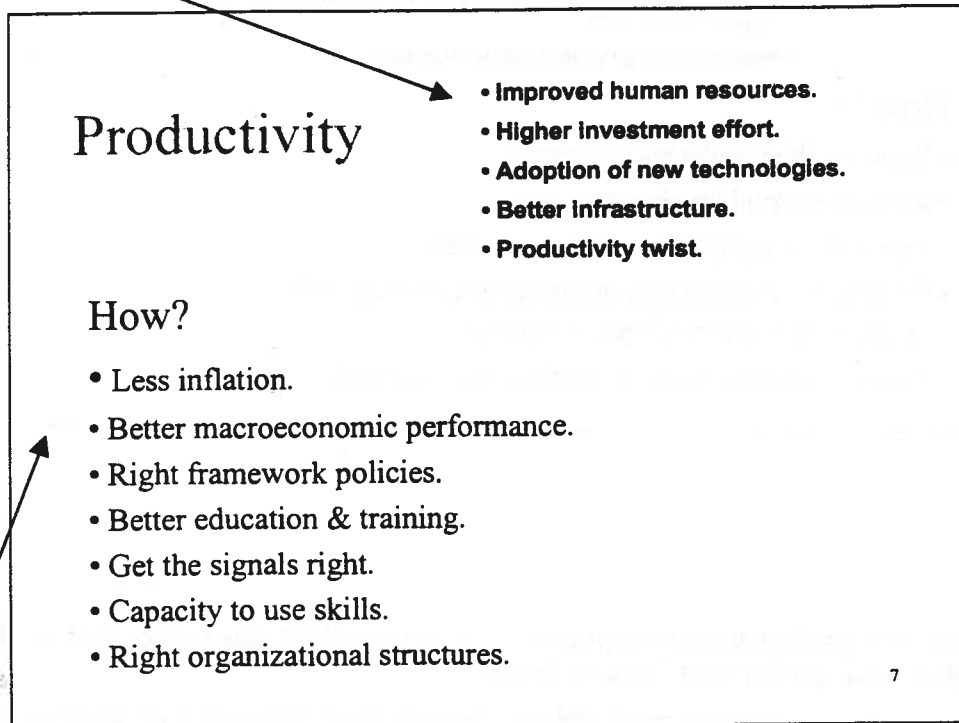
Productivity is a concept at the level of the **firm**, government department, or other organization (i.e., the **workplace**).

It is the base for competitiveness, and the root of real income gains.

Competitiveness is a concept of **marketplaces**, where relative costs determine if sustainable operations for a firm, and, indeed, an industry are possible.

Prosperity is the concept for the **society**, with improvements in real incomes, the quality of life, equity, and environmental sustainability all as goals.

- Improving productivity growth is the key to increasing competitiveness, which, in turn, should enhance prosperity.
- What we think works. (Productivity twist is a term for moving resources to high productivity industries from lower ones.)



Key Policy Moves.

First three are conducive to higher investment effort, more capital per worker, and better efforts by firms.

Rewarding innovation is part of the framework policies, including intellectual property law and a capitalistic system.

Next four are aimed at human resource elements, with concern about incentives, opportunity to use skills, and the importance of appropriate organizational structure for using the skills. TQM in a nutshell.

Competitiveness

- Improving the efficiency and effectiveness of the marketplace.
- Internationally, a relative concept, based on price, quality, deliverability, and service.
- Governments are involved, through regulation, standards, taxes and subsidies, crown corporations, international agreements, etc.
- Provision of physical infrastructure.

How?

- Improve the regulatory processes.
- Reduce internal barriers to trade.
- Improve access to international markets.
- Expand the information infrastructure on domestic markets and international economies.
- Assist Canadian firms in entering new markets.

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- Private sector market participants are expected to focus on selling, marketing, and service to clients. Adoption of a "global view" can be helpful.
- Governments in essence ensure the marketplace, through the maintenance of property rights and contract.
- Regulation can be of help to all participants in laying out the rules of the game.
- International agreements and coordination through GATT, FTA, NAFTA, G-7, and other international organizations are key to the maintenance of international markets.
- Tariffs, standards, and other regulations define the access of others to Canadian markets.
- Infrastructure spending on roads, water supply, etc. is crucial here in supporting the marketplace and ensuring competition among firms by creating a base of services.

Prosperity

- **Rising real incomes for all Canadians.**
- **Sustainable environment.**
- **Provision of safety nets.**
- **Contribution to world economies through aid, etc.**
- **Improvements in regional economies.**
- **Provision of amenities (parks, etc.)**
- **Participation of citizens in processes.**

How?

- **Redistribution of incomes from a growing pie.**
- **Efficient health care system.**
- **High-quality education system, available to all.**
- **Encourage voluntarism and charity.**
- **Involve citizens in determining goals.**

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- **In all of the activities of government there remains a strong priority on the efficiency of the operations. In essence, this ensures that income redistribution and other activities do not "waste" resources, maximizing the benefit delivered.**
- **Culture, public parks, and other niceties would also fit in here.**

The Production Function

$$Y = f(L, K)$$

$$Y = f(L, K; G)$$

$$Y = f(L, K; G; T)$$

$$Y = f(L, K; G; T; S)$$

$$Y = f(L, K; G; T; S; X, W, Z, \dots)$$

$$(Y + E + D + C + \dots) = f(\dots)$$

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The normal production function underlying the discussion of productivity and Total Factor Productivity (TFP) is the expression of output (usually value added or gross output, with labour and capital as inputs. If gross output is used, then material inputs may be added. The next level of sophistication is to include multiple forms of labour, using wage rates to weight labour into a human capital variable, and to adjust the capital stock for differing rates of return and depreciation rates.

It has been pointed out that G (public infrastructure capital stock) can influence productivity. (Aschauer, Munnell, and IC studies.)

The new growth theory (US version) emphasizes technology (T), and includes R&D spending, adoption rates of new technologies, etc. (In UK, Scott suggests adding investment effort directly.)

Work on social capital (S) is showing promise of identifying its importance in the production function, following up on Irma Adelman's work from the 1960s.

And even with all of these elements, there are no doubt additional factors to explain the remaining "residual". I suspect that X may be the overall amount of economic slack in the economy, which promotes X-efficiency in too many sectors. (Liebenstein)

Finally, we should not lose sight of the output part of the equation. It too needs to be expanded to include non-market outputs (e.g., pollution, trained people).

Social dimensions (S)

- Social capital
- Social cohesion
- Institutions

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There are many different definitions and measures for social capital, etc.

Key elements include:

- social networks
- trust and norms
- organized activities with others

Social institutions, particularly those that inform and help form a consensus may be crucial.

The Harberger View

- Life - to the residual
- Body - tangible costs in dollars
- Name - real cost reduction
- Address - the firm
- Face - the CEO or entrepreneur
- Many different expressions

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In a provocative article, Arnold Harberger sketched out a much different vision of the growth process and of the “residual” or TFP, by interpreting it as a real cost reduction (RCR).

“...it gives **life** to the residual, viewed as real cost reduction in a way that remote macroeconomic externalities never did. It gives the residual **body**, in the sense that the number of dollars saved by real cost reduction is a tangible and measurable quantity. It gives the residual a **name** (real cost reduction), an **address** (the firm), and a **face** (the face of the entrepreneur, the CEO, the production manager, etc.) And finally, we shall see that there can be vastly different **expressions** on that face, even as we move from firm to firm in a given industry, as the TFP experience of a period moves from sharply positive to devastatingly negative.” [p.4]

Arnold C. Harberger, “A Vision of the Growth Process”, **American Economic Review**, Vol. 88, No. 1 (March 1998) 1-32.

An extension I would suggest is to remember the faces of the employees and other stakeholders in the firm as well!

•Do What?

- Productivity is a “firm-level” concept
- Reducing slack would help
- Remember G
- Worry about S as much as T
- Don’t forget about X, Y, and Z

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Success in improving productivity in the market sector of the economy will be as a result of changes in the behavior and the organization of work at the level of the **firm**.

The output gap is about 9% of GDP - closing this quickly would provide a big boost to productivity growth, investment, and the real incomes of people.

Infrastructure matters, and much of it is the direct responsibility of government.

Social capital, etc. matters. I suspect that its deterioration has been hiding much of the positive contributions from improved technologies.

The dynamic element is also crucial - innovation, continuous cost reductions, and adoption of new technologies.

In the end, don’t forget that it is **prosperity** that is the ultimate objective - not just in Canada but throughout the world.

Components of Potential Output Growth

	1971/80	1980/90	1990/97
Trend Productivity	0.1	-0.3	-0.1
Capital Stock	1.8	1.7	1.3
Trend Participation Rate	0.7	0.5	0.0
Working Age Population	1.6	0.9	1.0
NAWRU*	-0.3	-0.1	0.1
Potential Output	3.9	2.7	2.2
Real GDP	4.2	2.8	1.8

Source: OECD Economic Surveys: Canada 1998, p.47

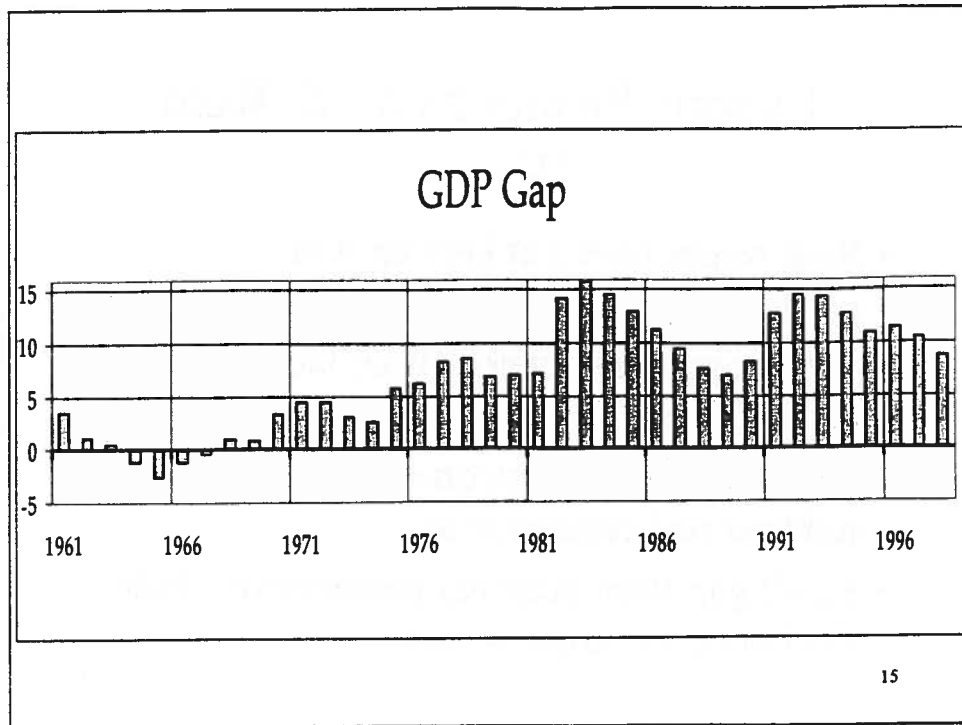
*non-accelerating wage rate of unemployment

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Total factor productivity growth in Canada has been negative on average for many years. This is the source of most of the concern about productivity.

But both the 1980s and 1990s saw deep recessions at the beginning of the decades, followed by slow recoveries.

The real issue might be how to avoid periodic recessions, or how to avoid the depth and breadth of the recessions.



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Economic performance has reflected the combination of tight monetary policy and tight fiscal policy.

The output gap today is about 8.8% of GDP, down from 14.6% in 1992.

This translates into a loss of more than \$80 billion in 1998 in forgone output that could have been produced with the people and capital already on the ground.

These are large numbers relative to the productivity debate in the short run.

More positively, there is growing evidence that a reduction in the output gap may be helpful in raising productivity growth as well.

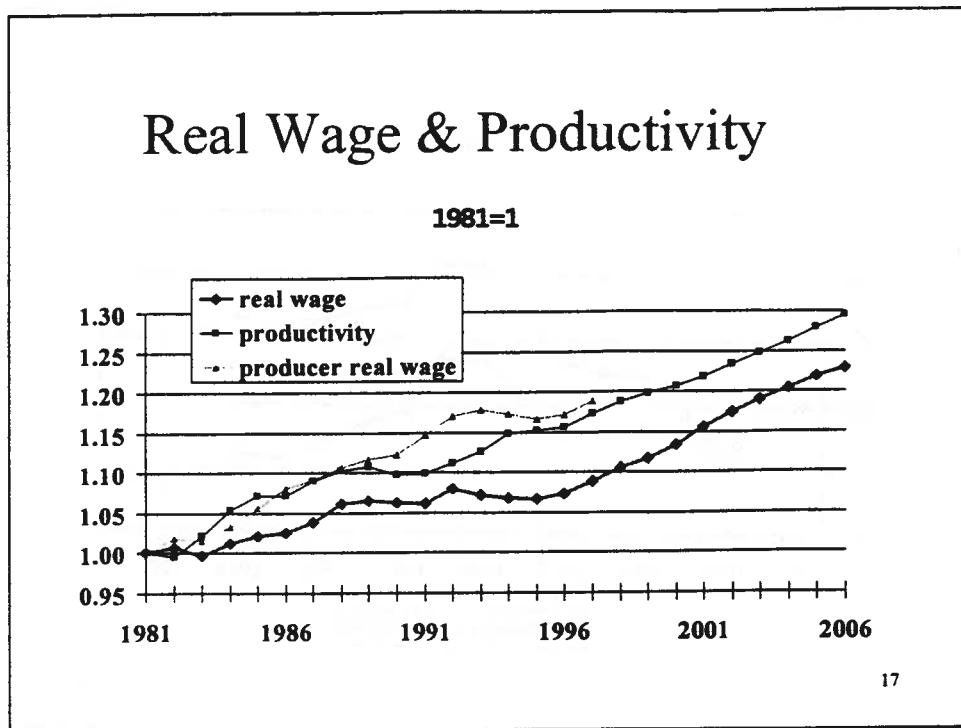
Labour Productivity & Real Wages

- Real wages have not kept up with productivity
- A large gap has opened (from labour perspective)
- This has held back income gains and reduced real consumption.
- Small gap from business perspective - little likelihood for improvement

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Real wages have not expanded in line with rising productivity. During recovery periods, productivity growth has exceeded real wage growth, and not been fully recovered in later stages. With 1981=1, productivity is 15.6% higher in 1996, real wages only 5.8% higher. (This means that productivity growth has averaged about 1% per year, with real wages less than 0.4% per year over the period from 1981 through 1996.

When looked at from employers' perspective, real wages (defined as the nominal wage rate divided by the GDP deflator at factor cost) are in line with real wages which have increased by 17% over the period from 1981 through 1996.



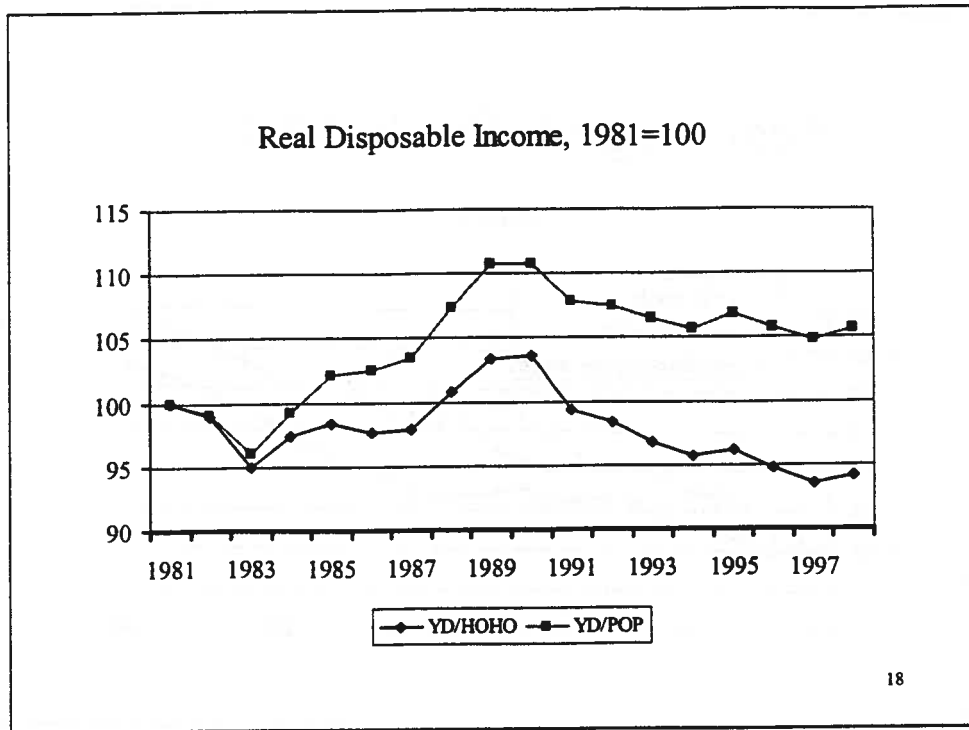
Real wages (including unincorporated income) have been losing ground relative to economy-wide productivity for many years. There was some “catch-up” in the early years of the recession when productivity declined and real wages rose modestly.

However, the gap is now over 8% and it narrows only slowly through 2006.

This poor performance of real wages is one of the reasons for such dismal income growth, and also is part of the reason for the increasing disparity of earned incomes between the rich and the working poor.

From the perspective of the employers, the wage bill deflated by their deflator for output, before indirect taxes, shows a different story. The real wage growth has more than kept in line with productivity growth, with a considerable gap in favor of workers opening up during the recession.

The problem is partly the role of indirect taxes. As well, there may be a “disconnect” between the prices as seen by business and the prices used in the CPI.



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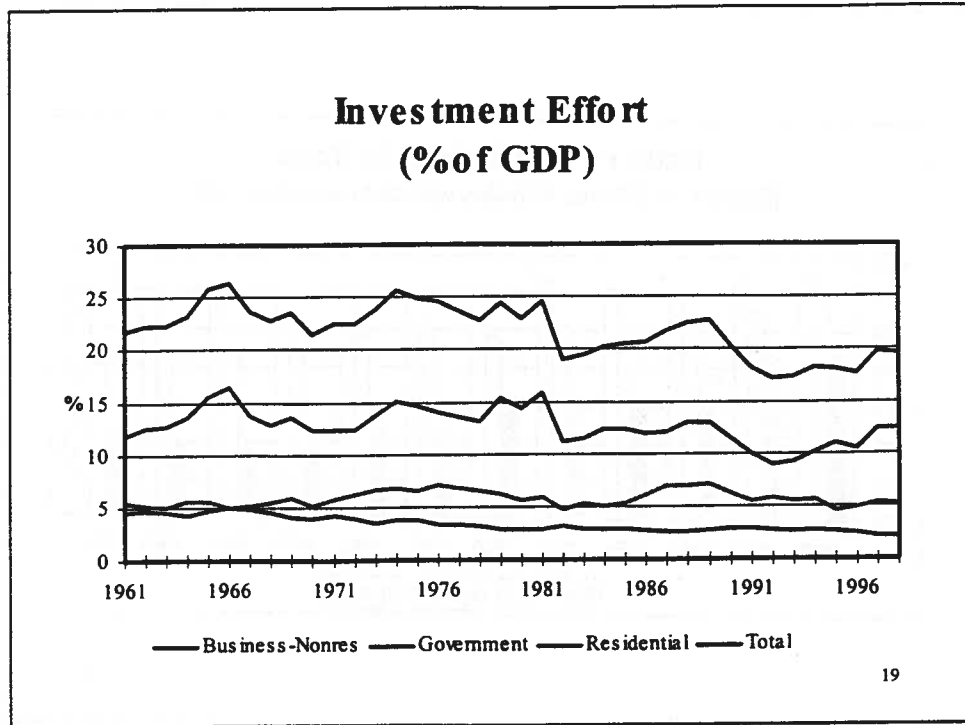
One of the sources of discontent in Canada is the lack of progress in the growth in real disposable income per household.

Although there was some recovery in the 1980s after the recession, the more recent recession plunged the consumer back into a funk. Levels declined below those in 1982, and have so far failed to show any sustained progress. Indeed the incomes per household have declined almost every year since 1989.

The prospect, starting in 1999, is for some improvement to set in. It will be 2005, however, before levels are back to 1981 values. (This is based on a "current policies continued" case.)

In essence, 25 years will have passed with no real income gains on average.

On a per capita basis, the story is not quite as grim. Real disposable income per capita is about 5% higher than 1981. Still this represents little progress in 17 years.

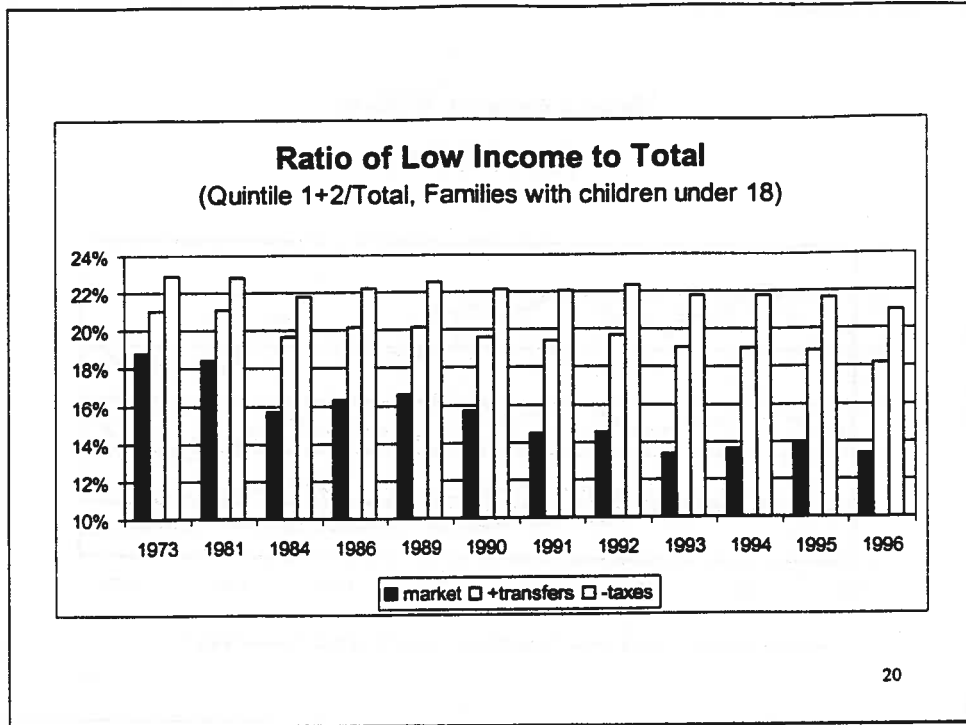


Recent levels are below those of any time in the post-war period (17.6% in 1996) and have remained below 20% since 1991. (This is public plus private spending.)

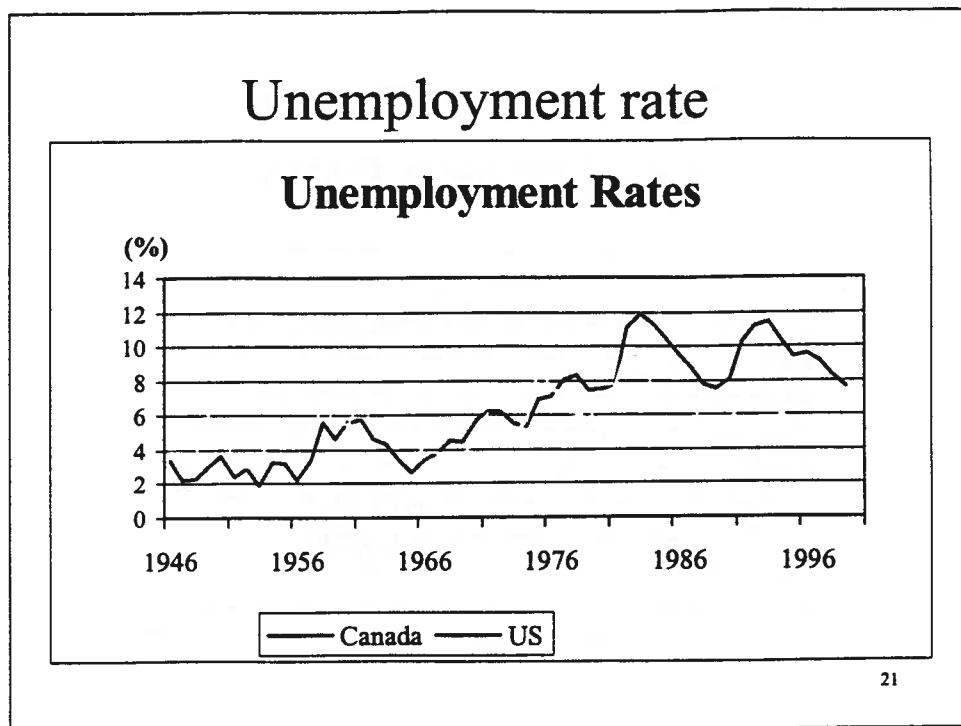
Some of this apparent weakness is attributable to the fall in computer prices, reducing the investment deflator relative to other prices that enter the GDP deflator. But something more serious is underway. With substantial excess capacity, firms only invest as absolutely necessary.

Even with some recent pickup in the business component, infrastructure spending continues to decline as governments pursue "prudent" policies.

Housing investment is weak, given poor incomes and some slowing growth in family formation.



In some countries, there has been a noticeable increase in income inequality, both on a market income basis and after-transfers and taxes. In Canada, this is evident over most of this period, with modest improvements in the distribution of market incomes only during a vigorous recovery (1986-89). These changes have been so large that after-tax and after transfer incomes have also become more unequal. Some of this worsening is attributable to direct policy choices to reduce the coverage of unemployment insurance and to cut back on welfare payments.



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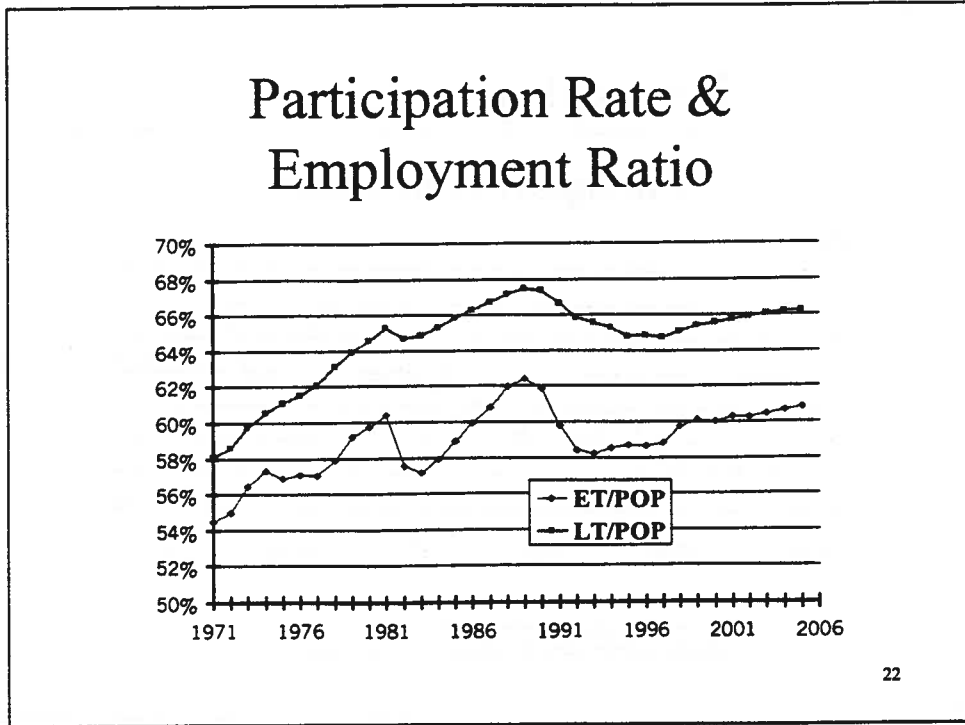
Canada has not tracked with the US since the early 1980s, **choosing** to grow less rapidly to reduce inflation.

The “economic theory” of the neoclassical economists suggests the improved inflation performance should translate into above-average business investment and heightened productivity growth on a continuing basis, providing the long-term reward for the short-term pain. We await the long run.

A direct result of these policies has been a high unemployment rate since the early 1980s. Not only have rates risen relative to the performance in the 1950s, 1960s, and 1970s, but also relative to the US. In the 1981-82 recession, an unemployment rate gap between Canada and the US of about **two** percentage points opened up and was continued until the recession of 1990-92. During that recession the gap widened to **four** percentage points and has essentially remained that way to date.

This unemployment rate gap translates into an output gap of about 10 per cent or about \$80 billion in forgone output. Such an economic loss each year seems a high price to pay for low inflation. (Using a Canadian version of Okun's Law, a one-percentage point reduction in the unemployment rate requires about 2.5 percentage points growth in GDP.)

YOUTH UNEMPLOYMENT is about 7 percentage points above the total unemployment rate, or 1.8 times that level. With little improvement projected in this scenario for total unemployment (staying between 8 and 9%), then youth unemployment remains over 14%.



Attention has recently been focused on the employment ratio. That is the number of people working, relative to the source population (15 and over, not institutionalized or in the Armed Forces) (red line above)

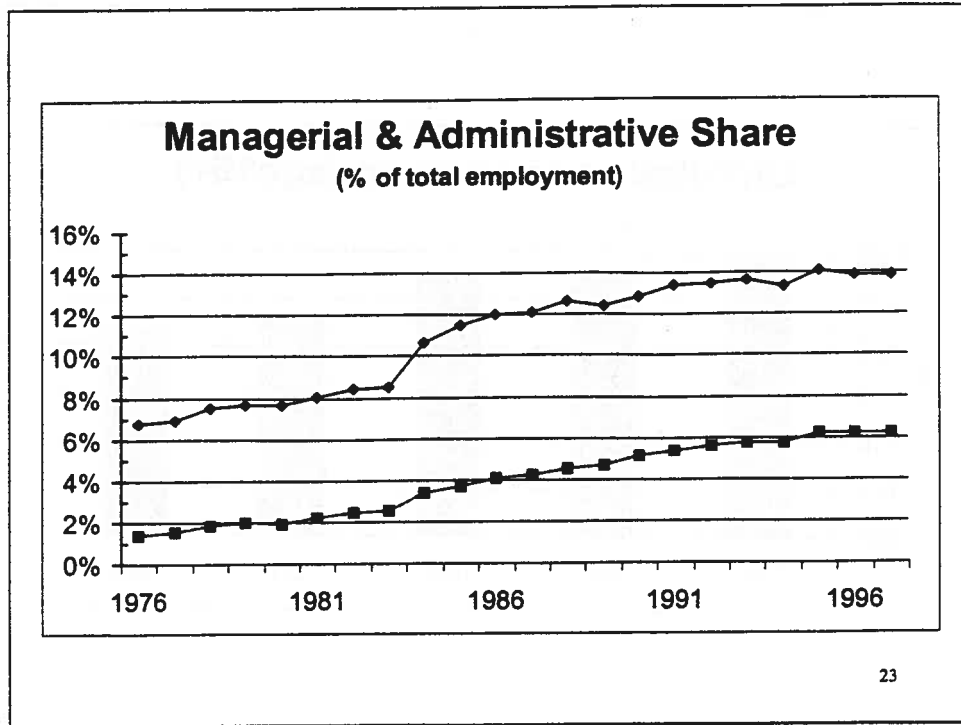
Pierre Fortin in his recent Presidential Address to the Canadian Economics Association, “**The Great Canadian Slump**”, noted that, “... the Canadian slump of the 1990s exceeds everything we have known since the Great Depression... cumulative losses already of 30% of the corresponding losses of the 1930s.” In his view, the culprits are the monetary and fiscal authorities pursuing restraint to eliminate inflation.

Pierre and I only disagree on the magnitude of the shortfall. I think it is much larger and that the poor performance dates all the way back to 1975! Pierre’s sense is that we are operating about 10% below our potential. By my reckoning, it is about 13%.

What we are talking about is an **annual waste** of \$80 to \$100 billion in forgone output, output that could be produced with the people we have today, the capital equipment we have today, and the “smarts” that we currently have.

Of interest to the outlook, in this forecast I do not anticipate much improvement in the employment ratio through 2000, and indeed beyond, with current policies continued.

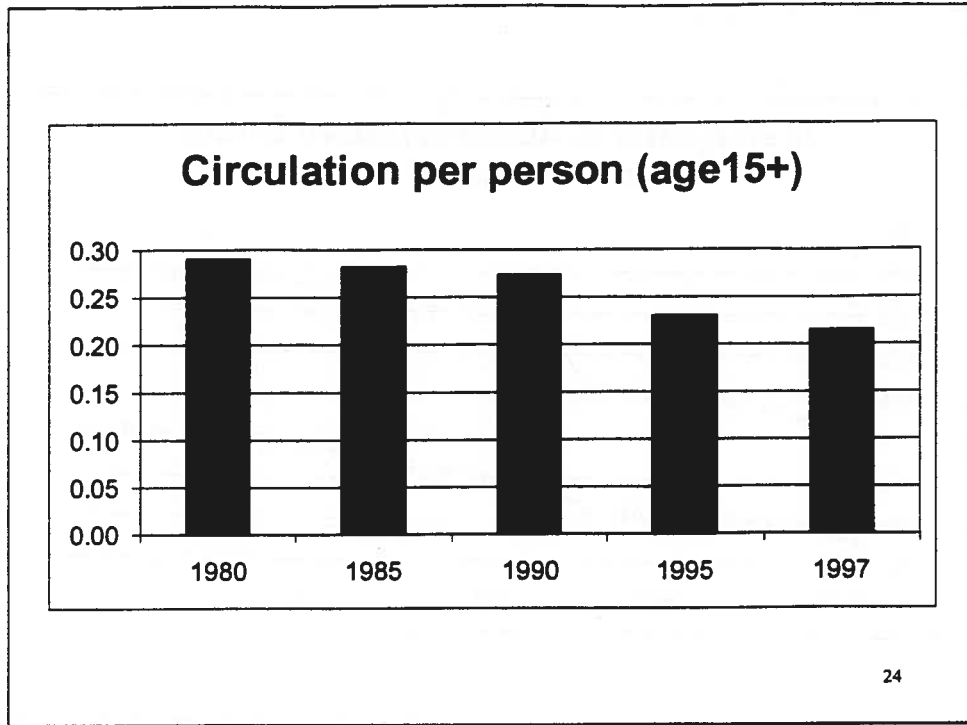
The labour force participation rate is also dampened in the future, affected by continuing high unemployment and by an increasing weight of the source population moving to the older age groups, with lower participation rates.



One interesting indicator is the ratio of managers to total employment. A high level of this ratio suggests a low level of trust of employees. An increasing share suggests an increasing weight of what is referred to as the “bureaucratic burden”.

See David M. Gordon, **Fat and Mean** (Free Press: 1996)

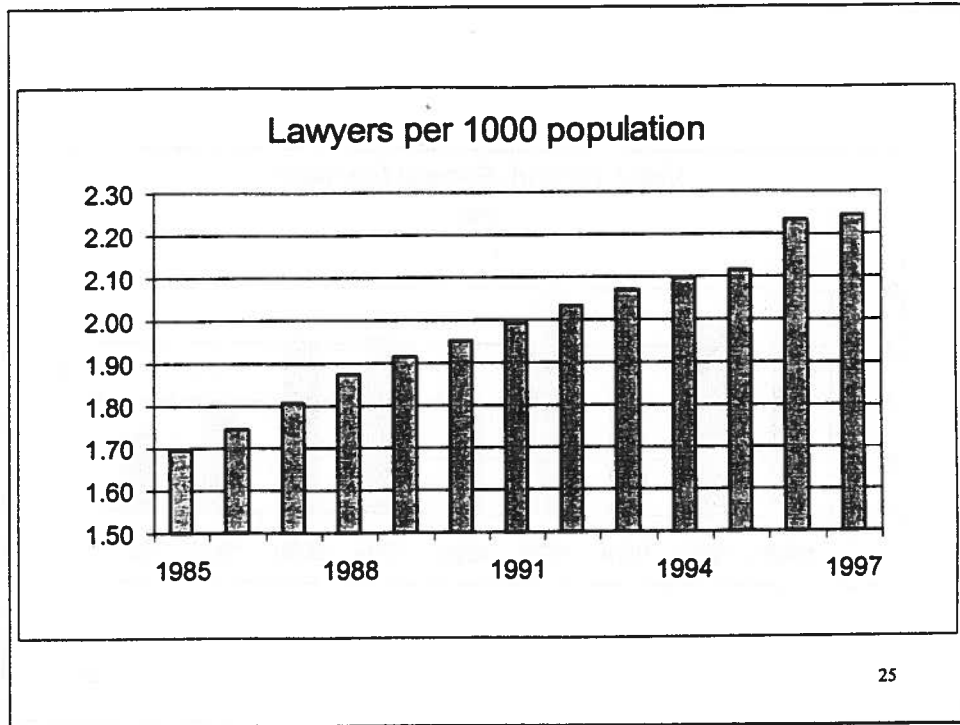
When compared to other countries, Canada and the US stand out as having a high burden - about 14% compared to 4-5% for most European countries and Japan.



Daily newspaper circulation is taken as a proxy for interest in political and civic matters. This circulation has been declining in Canada, both absolutely and on a per capita basis for some time.

(The population used here is that 15 and over.)

Some have argues for further adjustment for "quality".

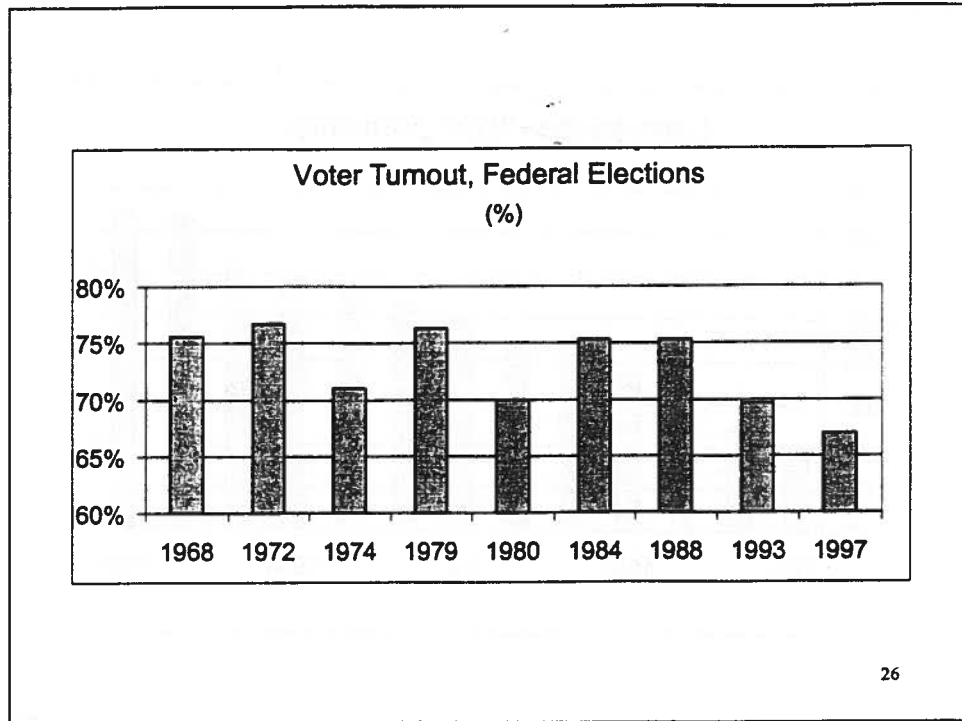


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One “popular ”measure of social cohesion is the number of lawyers in a society , scaled by some population measure.

The notion is that lawyers are needed to handle relationships when there is less trust between parties. Thus more lawyers per capita reflect less trust or social cohesion.

A longer time series would be useful here.



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The functioning of democratic processes is reflected in the proportion of eligible voters who actually vote. Since 1972, there has been a marked decline. Note in earlier years that frequent election calls seemed to result in lower turnout for the second round.