

**CANADA'S INFORMATION &  
COMMUNICATIONS TECHNOLOGIES  
TRADE PERFORMANCE**

**1990-1998**



**ICT Branch, SITT  
Industry Canada**

**Final Draft**

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**September 1999**





# *What is the ICT Sector (1)*

- **Manufacturing**

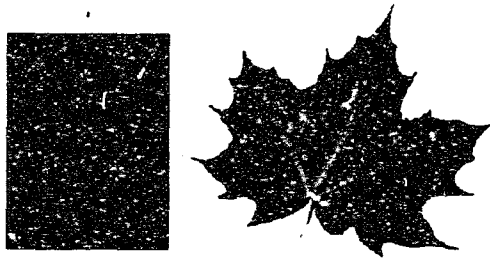
- ↗ Communication and telecommunication equipment (SIC 3351,3359)
- ↗ Computer equipment (SIC 3361,3362,3369)
- ↗ Electronic parts & components (SIC 3352)
- ↗ Consumer electronics (SIC 3341)
- ↗ Instrumentation (SIC 3911,3912)
- ↗ Communications wires and cables (SIC 3381)

- **Services**

- ↗ Software and computer services (SIC 7721,7722)
- ↗ Telecommunications services (wired line & wireless) (SIC 4821,4839)
- ↗ Cable television (SIC 4814)
- ↗ ICT wholesaling (SIC 5743,5744,5791)
- ↗ ICT rental and leasing (SIC 9913)

(1) According to the OECD/Statistics Canada industry-based definition adopted in September 1998.





# *The Canadian ICT Sector at a Glance*

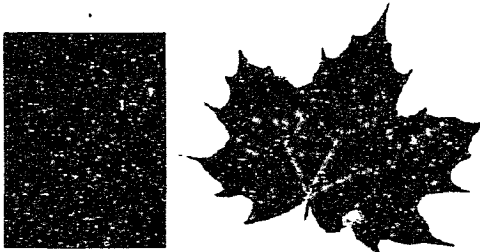
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## ***1997 Highlights :***

- 26,000 establishments (including 1,300 on the manufacturing side)
- 481,046 employees
- Total revenues of \$100.2 Billion
- Contribution to GDP : \$41.3 Billion (1992 constant dollars)
- \$29.0 Billion in total exports (in 1998)
- \$3.8 Billion in R&D expenditures (in 1998)
- 42.5% of total Canadian private sector R&D

Source: ICT Statistical Review, Industry Canada.

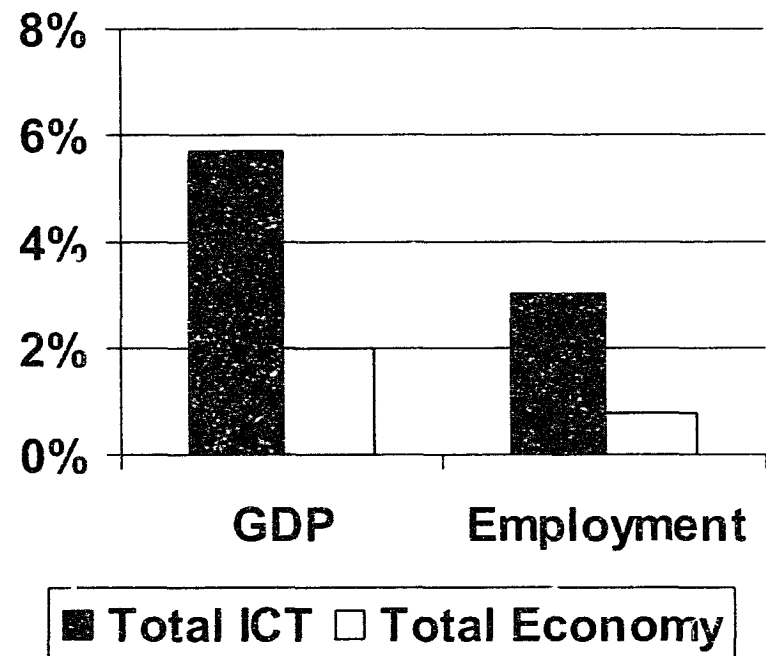




# *The ICT Sector is Growing three times Faster than the Canadian Economy*

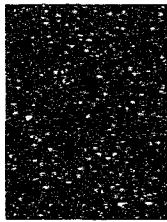
- Over the 1990-1997 period, the ICT sector GDP contribution has showed a Compound Annual Growth Rate (CAGR) of 5.7% compared to 2.0% for the Canadian economy.
- Employment has also increased faster in the ICT sector than in the economy as a whole (CAGR of 3.0% vs 0.8%).

**CAGR, 1990-1997**



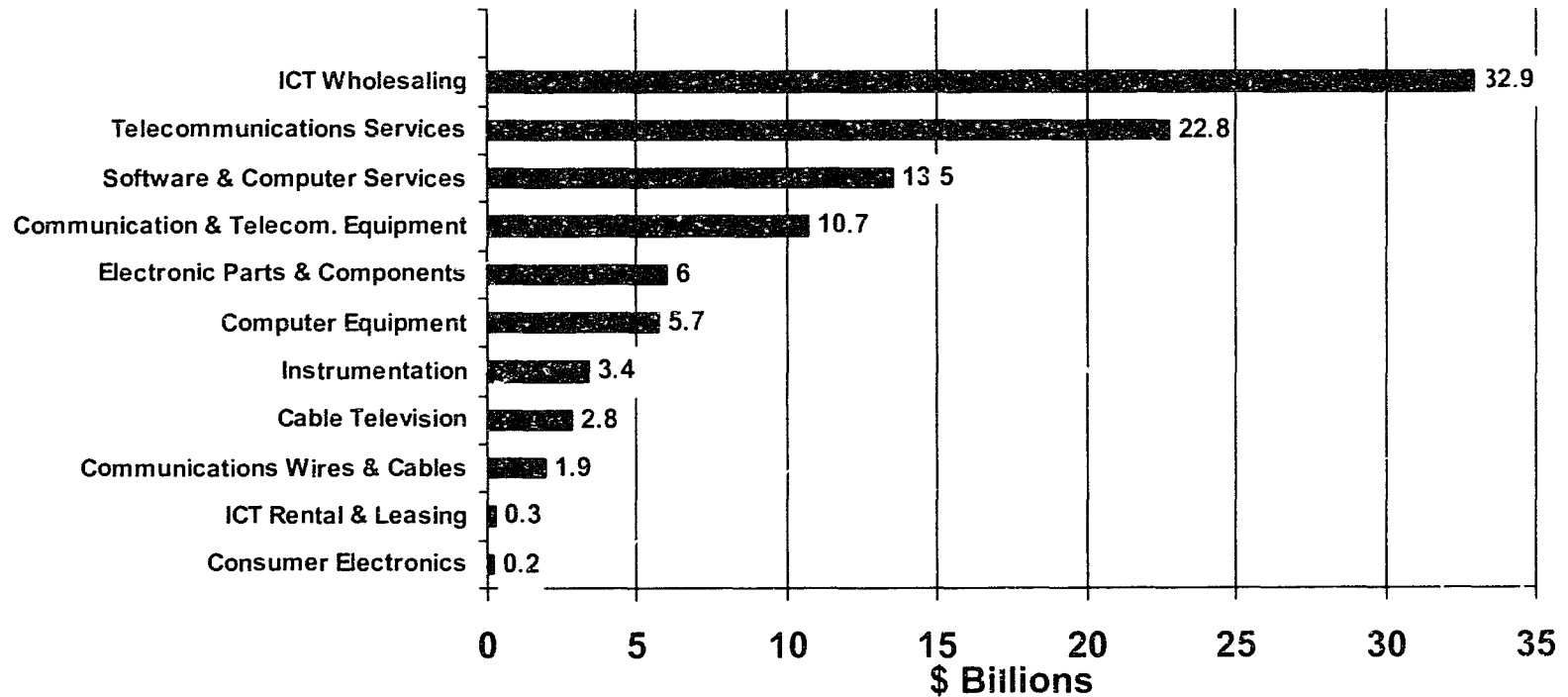
Source: ICT Statistical Review, Industry Canada.





# Total ICT Revenues Reached \$100.2 Billion in 1997

## Revenue Breakdown by Sub-Sector, 1997



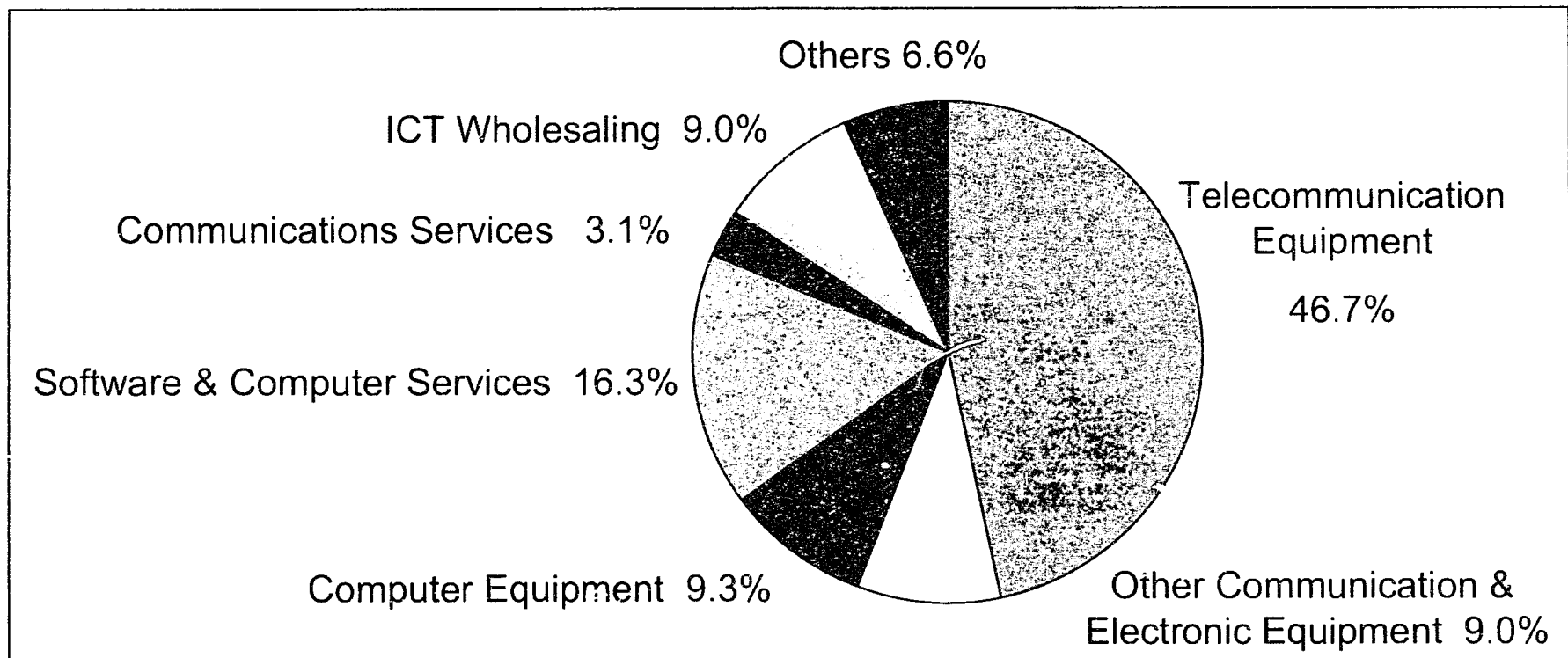
**ICT Services account for 72% of ICT Revenues**



Source: ICT Statistical Review, Industry Canada.

# One of the Largest R&D Performers in Canada

## 1998 ICT R&D Expenditures, by Segment (Total: \$3.8 Billion)



**ICT sector represents 42.5% of total Canadian private sector R&D**

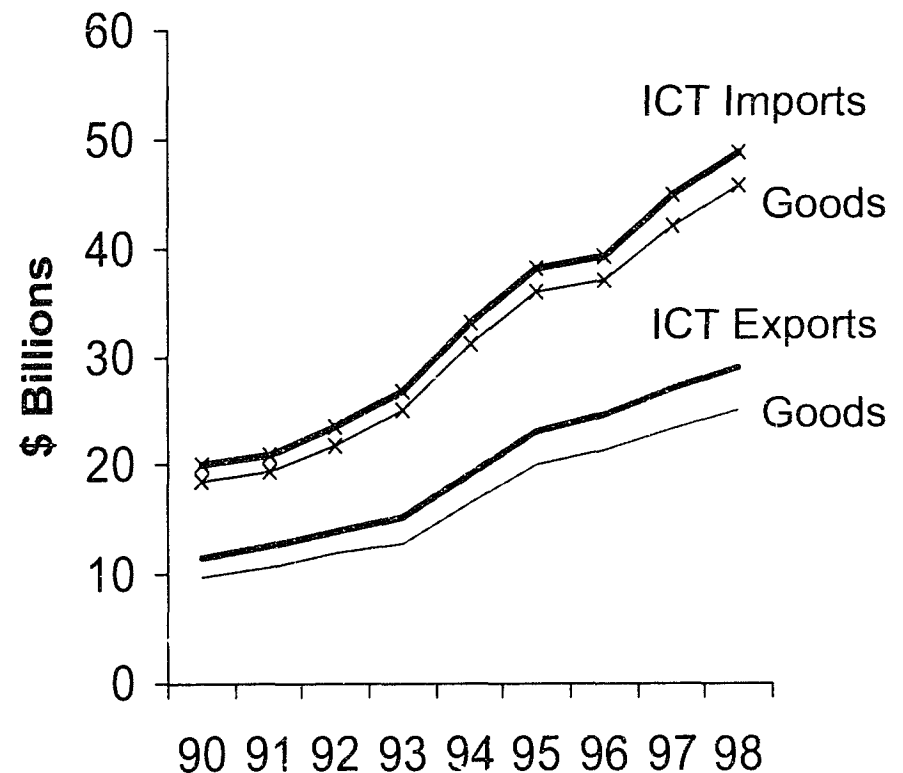
Source: ICT Statistical Review, Industry Canada.



# Canadian ICT Trade is Growing Fast

- In 1998, ICT exports increased by 7.1%, reaching \$29.0 billion (incl. re-exports) while ICT imports reached \$48.9 billion, up 9.0% from 1997.
- Goods accounted for 86% of ICT exports and 94% of ICT imports.
- Between 1990-1998, ICT exports increased at a CAGR of 12.1% while imports grew by 11.8% (compared to 10.1% and 10.2% for total Canadian exports and imports respectively).
- The ICT trade deficit reached \$19.9 billion in 1998, a rise of 11.8% over 1997. The deficit experienced a CAGR of 11.4% between 1990 and 1998.

**ICT Trade, 1990-1998  
Goods & Services**



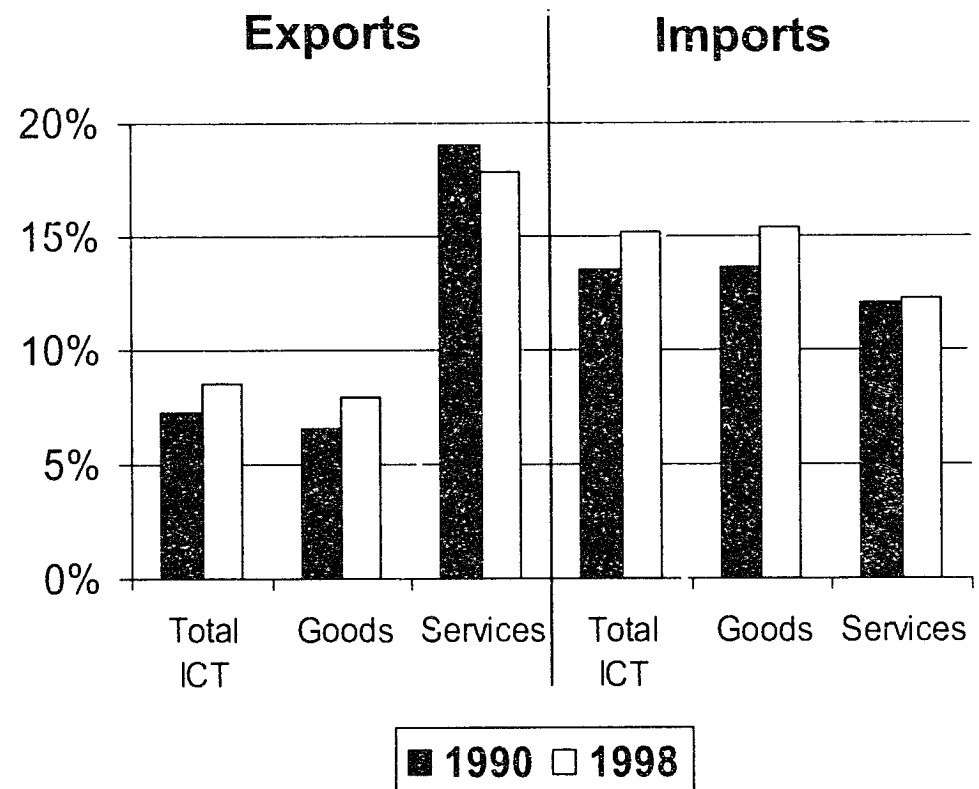
Source: ICT Statistical Review, Industry Canada.



# ICT Trade Represents a Substantial Share of Canadian Trade

- Total ICT exports accounted for 8.5% of total Canadian exports in 1998 (up from 7.3% in 1990) while total ICT imports represented 15.2% of total Canadian imports (up from 13.5% in 1990).
- Exports of ICT goods represented 7.9% of Canadian merchandise exports (up from 6.6% in 1990) while ICT services exports accounted for 17.8% of total Canadian commercial services exports (down from 19.0% in 1990).
- Imports of ICT goods accounted for 15.4% of Canadian merchandise imports (up from 13.6% in 1990) while ICT services imports represented 12.3% of the Canadian commercial services imports (up from 12.1% in 1990).

**Weight of ICT Trade in Canadian International Trade**



Source: ICT Statistical Review, Industry Canada.

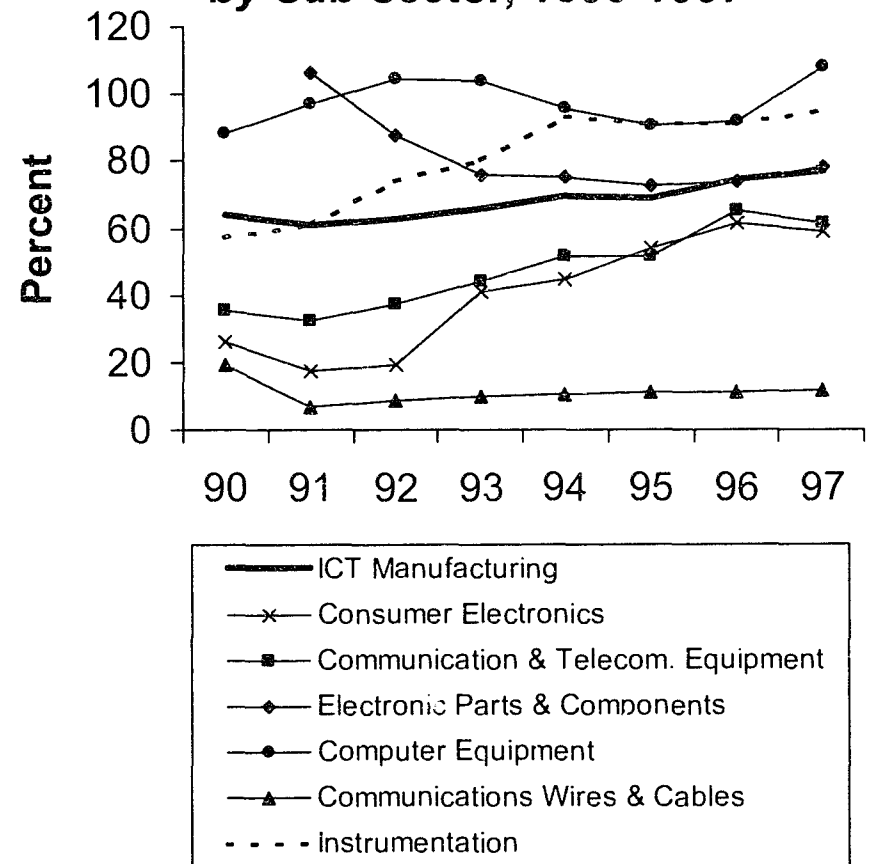




# Exports are Crucial to the ICT Manufacturing Sector

- Domestic exports accounted for 77.2% of ICT manufacturing shipments in 1997, compared to 63.8% in 1990.
- Domestic exports of the computer equipment and instrumentation industries represented over 95% of their respective manufacturing shipments in 1997.
- Despite a decline in the early '90s, domestic exports of the electronic components industry still represent more than 78% of its manufacturing shipments.
- This ratio has increased for the communication & telecommunication equipment and the consumer electronics industries, reaching 60% in 1997.

**Share of Domestic Exports in ICT Manufacturing Shipments by Sub-sector, 1990-1997**



Source: ICT Statistical Review, Industry Canada.

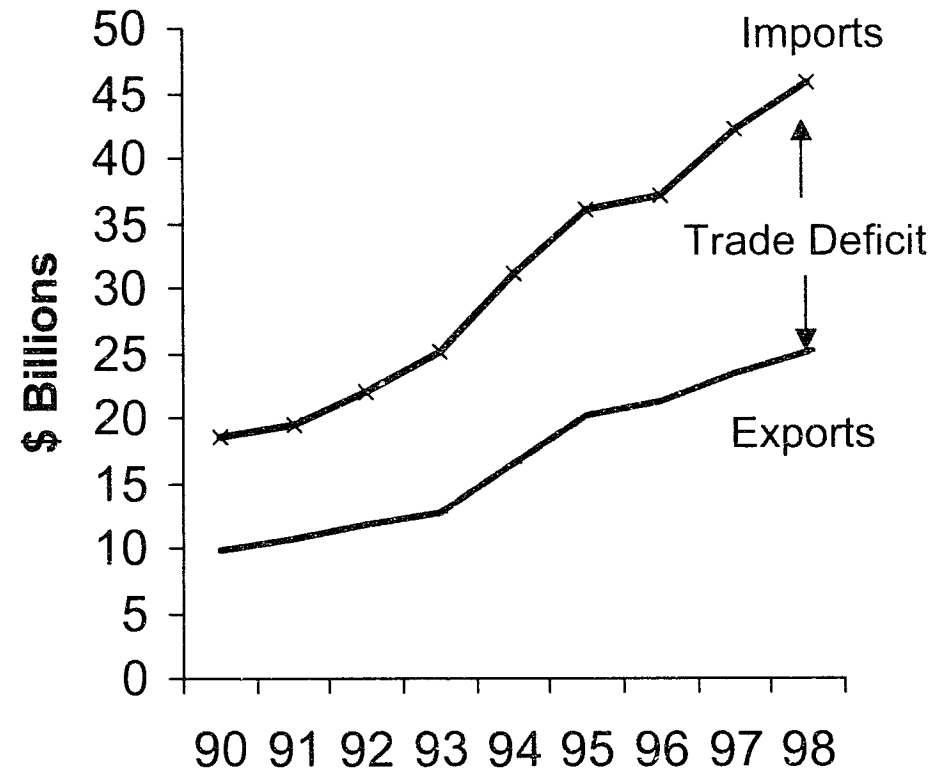
Note: Some ratios may be higher than 100% since the sources for domestic exports and manuf. shipments are different.



# A Growing Trade Deficit in ICT Manufacturing...

- ICT manufacturing exports were \$25.1 billion in 1998 (up 7.1% from 1997) while ICT manufacturing imports reached \$45.9 billion (up 8.8% from 1997).
- The resulting trade deficit reached \$20.8 billion, an increase of 11.0% from 1997 (the CAGR is 11.7% over the 1990-1998 period).
- The growing deficit is mainly due to the increased imports of electronic components which reached \$15.5 billion in 1998, including \$9.0 billion in semiconductors imports. Canada is aggressively seeking investment in a semiconductor plant.
- Between 1990 and 1998, the CAGRs for ICT manufacturing exports and imports were 12.3% and 12.0% respectively (compared to 9.9% and 10.3% for the Canadian manufacturing sector).

**ICT Manufacturing Trade,  
1990-1998**



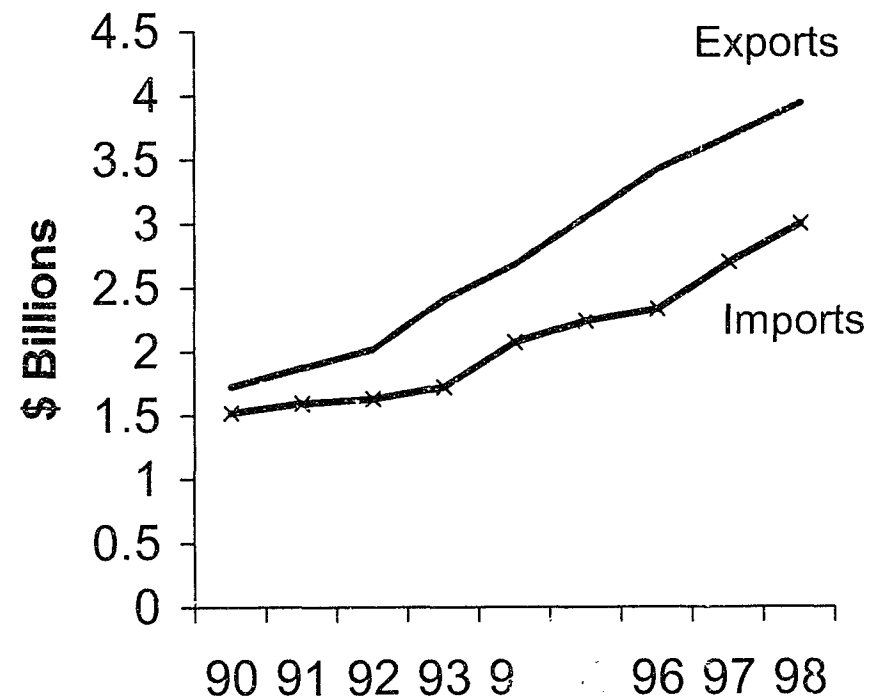
Source: ICT Statistical Review, Industry Canada.



## ... but a Positive Trade Balance in ICT Services

- ICT services account for a small portion of total ICT trade (14% of exports and 6% of imports in 1998). Computer and communications services are the only two sub-sectors in ICT services for which trade statistics are available.
- Exports in ICT services increased by 7.1% to reach \$3.9 billion in 1998, while the imports increased by 10.7% to reach \$3.0 billion. Between 1990 and 1998, the CAGR was 10.9% for exports and 8.9% for imports (compared to 11.9% and 8.7% respectively for the Canadian commercial services).
- The positive trade balance for ICT services decreased by 2.7% in 1998, down to \$943 million. Nevertheless, over the 1990-1998 period, the trade balance improved at a CAGR of 20.7%.

**Trade in ICT Services,  
1990-1998**



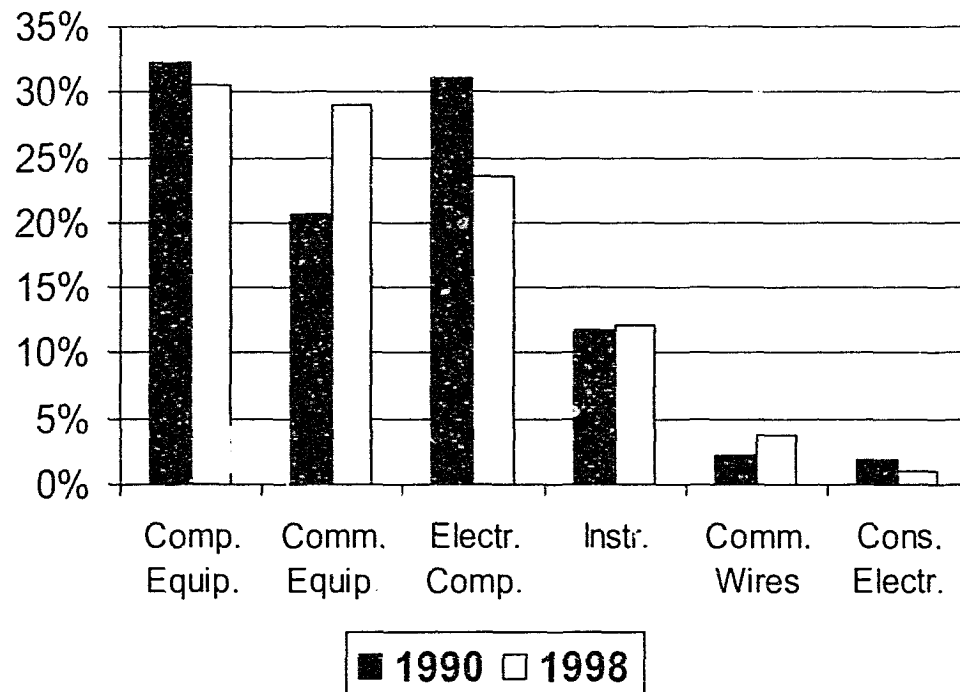
Source: ICT Statistical Review, Industry Canada.



# Composition of Exports in ICT Manufacturing

## Shift in Composition of ICT Manufacturing Exports

\$25.1 B 1998  
\$9.9 B 1990



- The computer equipment, communication & telecom equipment, and the electronic components industries represented more than 83% of total ICT manufacturing exports in 1998.
- The communication and telecom. equipment industry strongly increased its share of exports from 20.7% to 29.1% between 1990 and 1998, while the electronic components industry's share decreased from 31% to 23.5%.
- Despite a slight decline over the same period, the computer equipment industry still represented the highest share of ICT exports with 30.5% in 1998.

Source: ICT Statistical Review, Industry Canada.



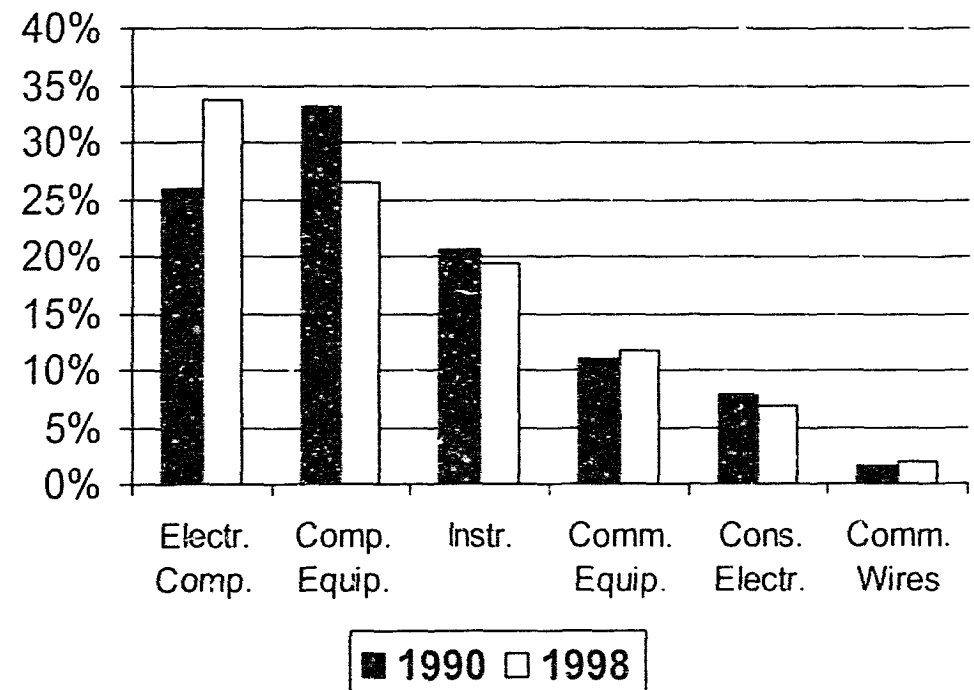
# Composition of Imports in ICT Manufacturing

- The electronic components, computer equipment and instrumentation industries represented close to 80% of the ICT manufacturing imports in 1998.
- The electronic components industry substantially increased its share from 25.9% to 33.7% between 1990 and 1998, while the computer equipment industry's share decreased from 33.1% to 26.5%.
- The electronic components industry accounted for more than 45% of the ICT manufacturing trade deficit in 1998 and 48% of the deficit growth occurring over 1990-1998.
- Although most of the ICT manufacturing industries experienced a trade deficit over the 1990-1998 period, the communication & telecom. equipment is the only industry that consistently showed a trade surplus.

## Shift in Composition of ICT Manufacturing Imports

\$45.9 B 1998

\$18.5 B 1990



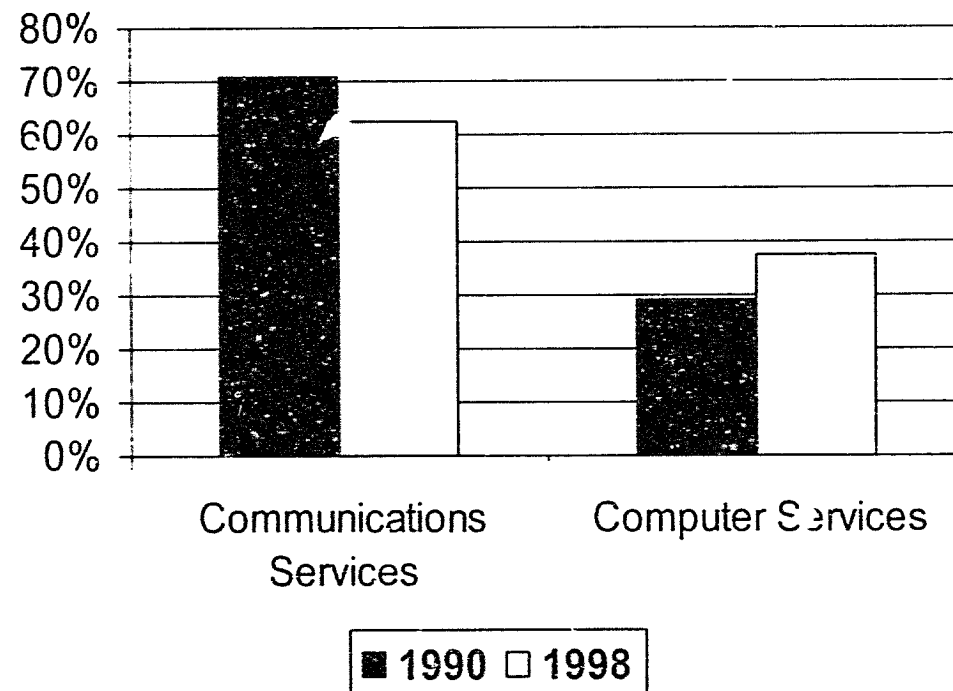
Source: ICT Statistical Review, Industry Canada.

# Composition of Exports in ICT Services

## Shift in Composition of Exports for ICT Services

\$3.9 B 1998

\$1.7 B 1990



- The communications services industry represented 62.5% of the ICT services exports in 1998 while computer services accounted for a 37.5% share.
- However, showing a CAGR of 14.4% during the 1990-1998 period, exports in computer services increased at a faster annual growth rate than exports in communications services, which showed a CAGR of 9.2%.

Source: ICT Statistical Review, Industry Canada.

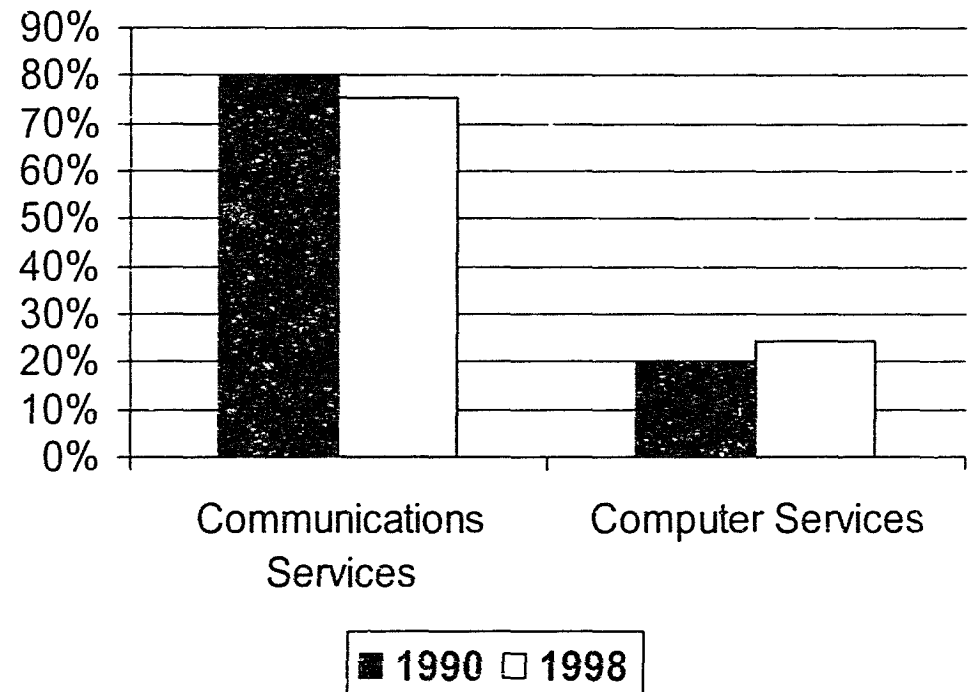


# Composition of Imports in ICT Services

## Shift in Composition of Imports for ICT Services

\$3.0 B 1998  
\$1.5 B 1990

- The communications services industry accounted for 75.7% of the ICT services imports in 1998 compared to 24.3% for computer services.
- The computer services represented close to 80% of the trade surplus in ICT services in 1998.



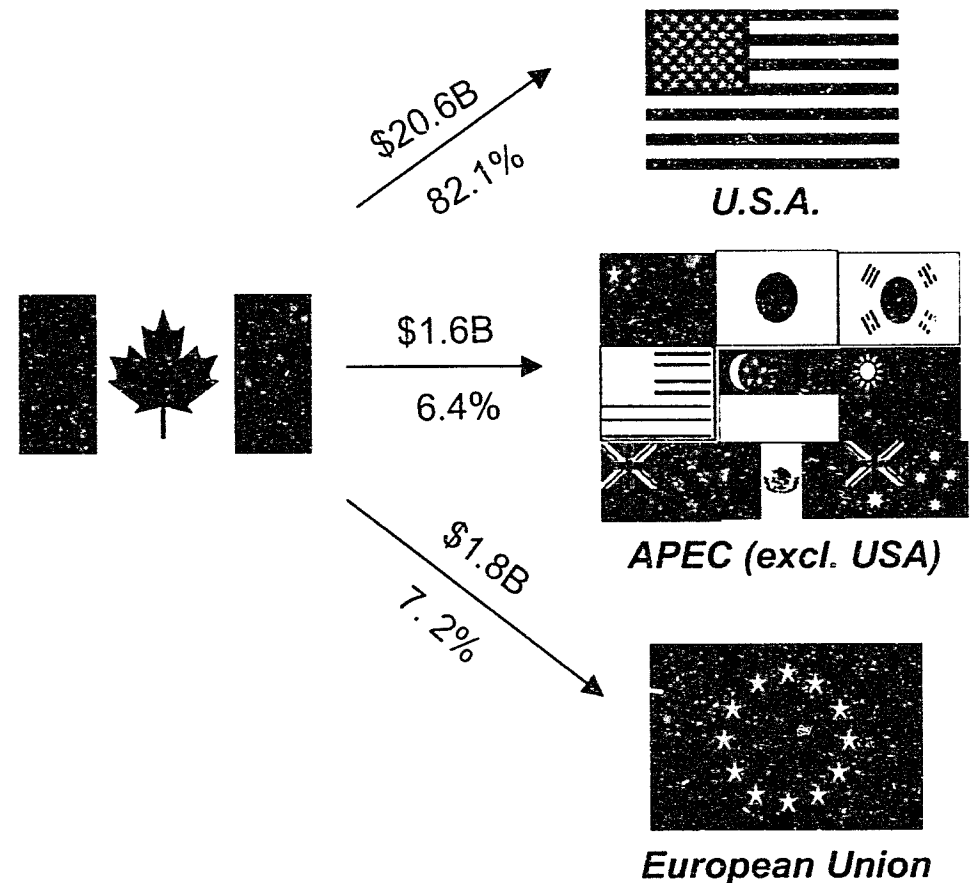
Source: ICT Statistical Review, Industry Canada.



# The U.S. is our largest ICT export market

- Shipments to the United States grew by 9.7% in 1998 to reach \$20.6B. These exports accounted for 82.1% of all ICT manuf. exports, up from 77.6% in 1990, a 4.5% increase.
- By contrast, the proportion of shipments to the European Union went down from 11.5% to 7.2% over the 1990-1998 period, representing a drop of 4.3%.
- The proportion of exports to the APEC countries and to the rest of the world remained relatively stable during that period.
- The respective 1990-98 CAGRs in exports by region of destination was 13.1% for the US, 5.8% for the EU, 12.2% for the APEC countries, and 12.4% for the rest of the world.

## 1998 ICT Manufacturing Exports by Region of Destination, Value and Share



Source: TIERS, Statistics Canada.

Rest of the World: \$1.1 Billion (4.3%)

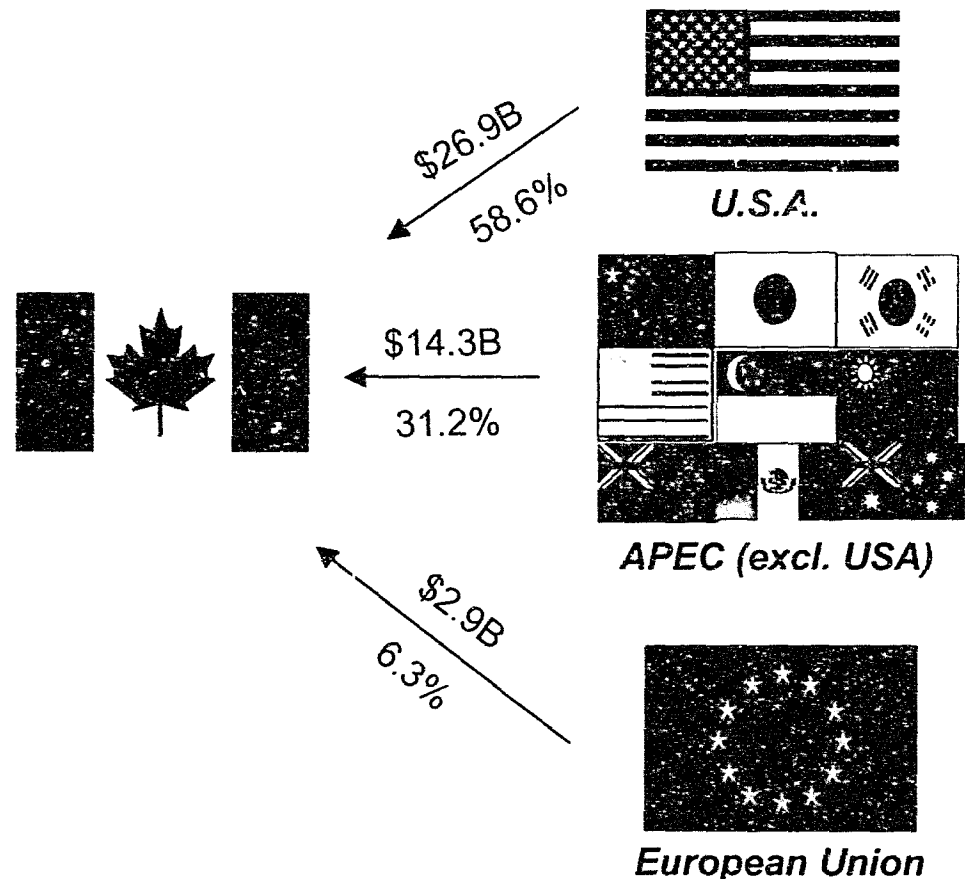
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# ...while the APEC represents an increasing share of our ICT imports

## 1998 ICT Manufacturing Imports by Region of Origin, Value and Share

- Shipments from the U.S. grew by 8.3% in 1998 to reach \$26.9B, accounting for 58.6% of all ICT manufacturing imports. This is down from 63.8% in 1990, a 5.2% decrease.
- By contrast, the proportion of imports from the APEC countries increased from 24.9% to 31.2% between 1990 and 1998, representing a rise of 6.3% .
- The proportion of imports from the E.U. and from the rest of the world remained relatively stable over that period.
- The respective 1990-98 CAGRs in imports by region of origin was 10.8% for the US, 11.1% for the EU, 15.2% for the APEC countries, and 10.4% for the rest of the world.



Source: TIERS, Statistics Canada.

Rest of the World: \$1.8 Billion (3.9%)

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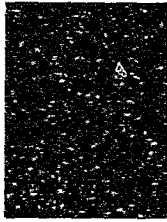
# The Top 15 Canadian ICT Export Market Countries

## Canadian ICT Manufacturing Exports, Top 15 Countries of Destination, 1998

- Our largest export market by far is the US, which showed a CAGR of 13.1% over the 1990-1998 period. The UK comes second, with \$693M in 1998.
- Brazil, Hong Kong, and Ireland follow in terms of importance. Our exports to these markets showed the highest CAGR between 1990 and 1998 ranging from 20.5% to 43.5%.
- Australia also reached a substantial annual growth rate of 17.8% during the same period.
- Shipments to Asian countries such as Japan, China, Taiwan, South Korea and Singapore went down in 1998 due to the economic crisis in Asia. They all showed negative 1997-1998 growth rates.
- ICT manufacturing exports to Germany and the Netherlands dropped during the nineties, showing negative CAGRs.

Country of Destination	Exports (M \$Cdn)	CAGR % (1990-98)	Growth % (1997-98)
1 USA	20,567	13.1%	9.8%
2 UK	693	12.2%	3.4%
3 Brazil	266	43.5%	-11.0%
4 Hong Kong	265	22.1%	-0.2%
5 Ireland	243	20.5%	22.1%
6 Japan	242	8.6%	-9.4%
7 France	206	10.1%	21.2%
8 China	198	7.6%	-27.0%
9 Germany	197	-1.8%	-17.9%
10 Taiwan	171	13.8%	-28.8%
11 Netherlands	168	-6.2%	32.3%
12 Australia	166	17.8%	11.4%
13 Mexico	141	9.6%	46.9%
14 South Korea	121	9.8%	-39.8%
15 Singapore	115	10.5%	-25.8%
Total Top 15	23,759	12.6%	7.6%
Total Worldwide	25,057	12.3%	7.1%

Source: TIERS, Statistics Canada.



# Canada is 16th Worldwide in Total ICT Manufacturing Exports

## Global ICT Manufacturing Exports, Top 16 Export Countries, 1996

- The US and Japan are the two largest exporters of ICT goods, followed by Singapore, Germany and the UK. These five countries represent \$ 636B or 52.5% of global ICT manufacturing exports.
- Canada, which showed a CAGR similar to that of the US, went from the 13th to the 16th rank between 1990 and 1996. With a total of \$22.3B in 1996, Canada accounted for 1.8% of global exports of ICT goods.
- With a CAGR of 47%, Mexico showed the largest annual growth rate in exports over the 1990-1996 period, followed by the Asian countries. In the order come China (27%), Thailand (23%), Malaysia (22%), Singapore (18%), Hong Kong (16%), Taiwan (15%), and Korea Rp (13%).

Export Country	ICTM Exports (Billions \$Cdn)	CAGR % (1990-96)
1 USA	207.4	10.8%
2 Japan	172.1	6.9%
3 Singapore	96.0	18.4%
4 Germany	85.3	7.5%
5 U.K.	75.5	10.9%
6 Taiwan	57.9	14.5%
7 Hong Kong	56.1	15.5%
8 Malaysia	52.2	21.9%
9 France	47.5	9.5%
10 Korea Rp	47.0	12.8%
11 Netherlands	43.7	13.5%
12 China	29.1	27.0%
13 Mexico	24.3	47.2%
14 Thailand	23.1	22.7%
15 Italy	23.1	7.1%
16 Canada	22.3	10.5%
Top 16 countries	1,063.9	16.0%
Total Worldwide	1,211.1	11.9%

Source: World Trade Analyzer, United Nations.





# Canada's Share of the Global ICT Export Market is Decreasing

## Global ICT Manufacturing Exports, Top 15 Destinations & Canadian Share

- Global ICT manufacturing exports showed a growth of 147% between 1990-1996. With \$230B in 1996, the US are by far the largest buyer of ICT goods in the world, followed by Germany, Japan, UK and Singapore, while Canada is at the 8th rank.
- Despite some improvements in a number of countries, Canada has seen its export share decreased from 1.98% to 1.78% worldwide and from 8.58% to 7.67% in the US over the 1990-1996 period.
- The strongest growing ICT markets are the Asian countries with growth rates ranging from 180% to 395% between 1990 and 1996. This was before the economic crisis of 1998 in Asia.

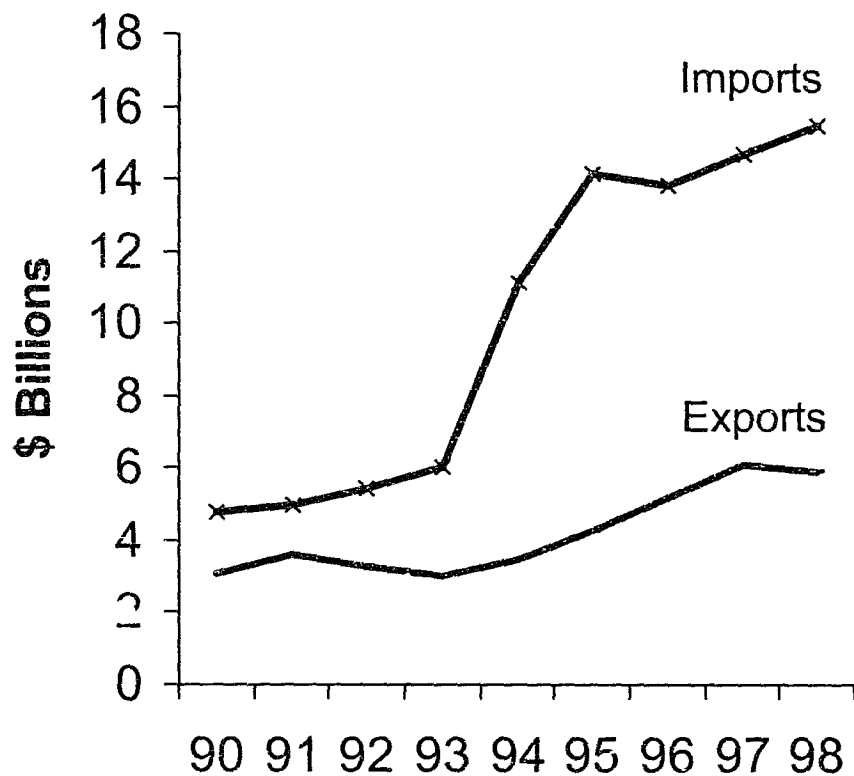
Country of Destination	Global Exports (Billions \$Cdn)			Cdn Share (percent %)		
	1996	1990	Growth	1996	1990	+/-
1 USA	230.2	92.2	150%	7.67	8.58	-
2 Germany	88.5	46.9	89%	0.44	0.31	+
3 Japan	73.6	20.1	266%	0.30	0.53	-
4 UK	73.1	36.0	103%	1.00	0.87	+
5 Singapore	67.7	18.2	272%	0.22	0.29	-
6 Hong Kong	52.6	15.6	237%	0.46	0.38	+
7 France	50.1	27.9	80%	0.35	0.42	-
8 Canada	43.4	20.9	108%			
9 Netherlands	43.1	20.1	114%	0.26	1.25	-
10 Malaysia	42.6	8.6	395%	0.21	0.18	+
11 China	36.0	7.6	374%	0.79	1.30	-
12 Taiwan	34.9	12.1	180%	0.68	0.54	+
13 Korea Rp.	34.8	11.8	195%	0.55	0.35	+
14 Italy	31.4	22.1	42%	0.36	0.25	+
15 Mexico	22.1	7.8	183%	0.80	0.98	-
Top 15	924.1	367.9	151%			
Top 15 (-Can)	880.7	347.0	154%	2.25	2.53	-
Worldwide	1,211.1	491.1	147%			
World. (-Can)	1,167.7	470.2	148%	1.78	1.98	-

Source: World Trade Analyzer, United Nations.

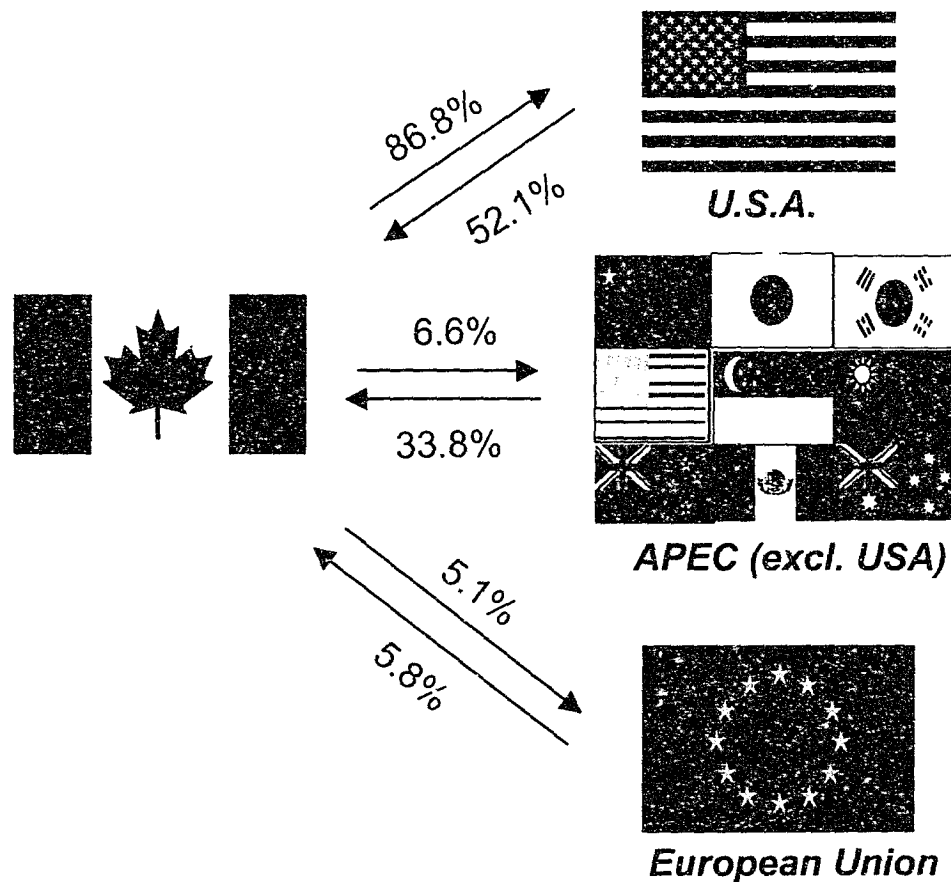
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# The ICT Manufacturing Trade by Sub-sector and Region

Trade in Electronic Parts & Components, 1990-1998



Trade in Electronic Parts & Components, Share by Region, 1998

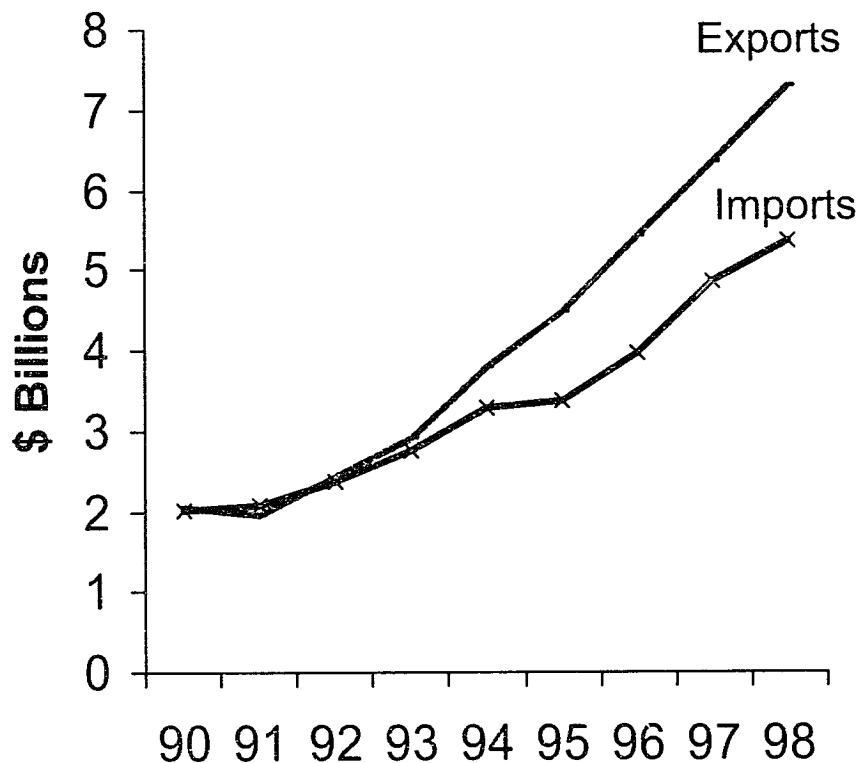


Source: TIERS, Statistics Canada.

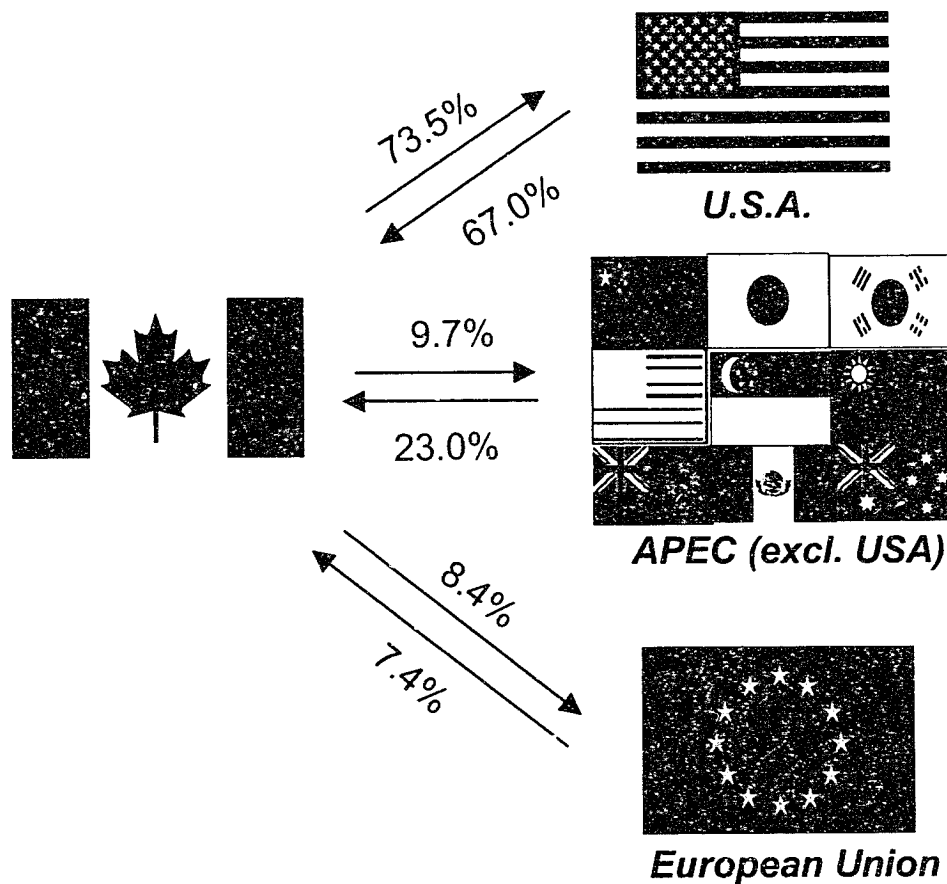


# The ICT Manufacturing Trade by Sub-sector and Region

Trade in Communication & Telecom Equipment, 1990-98



Trade in Communication & Telecom. Equipment, Share by Region, 1998

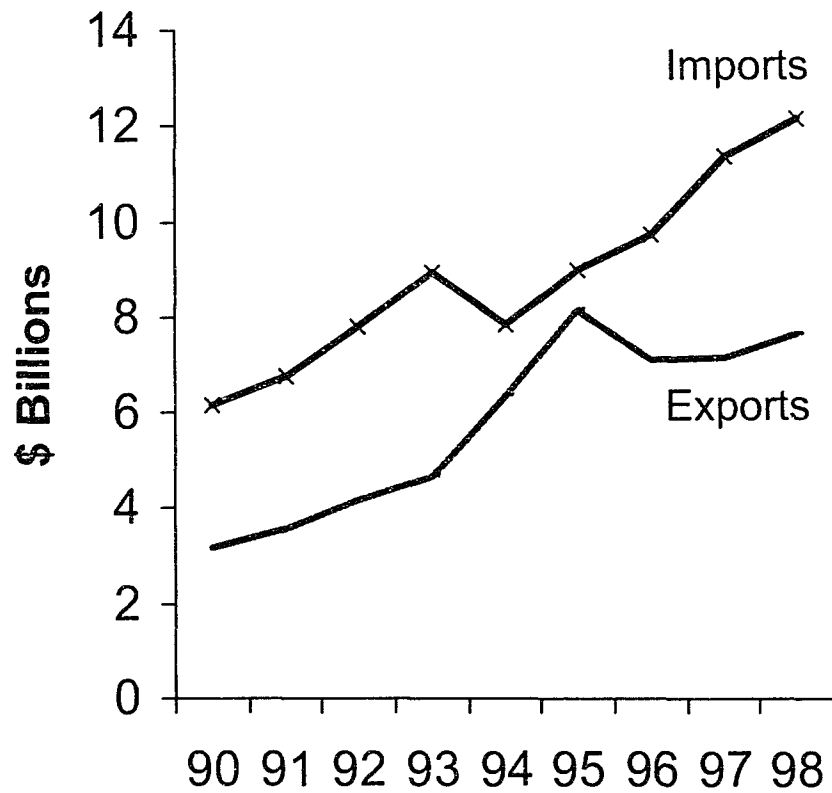


Source: TIERS, Statistics Canada.

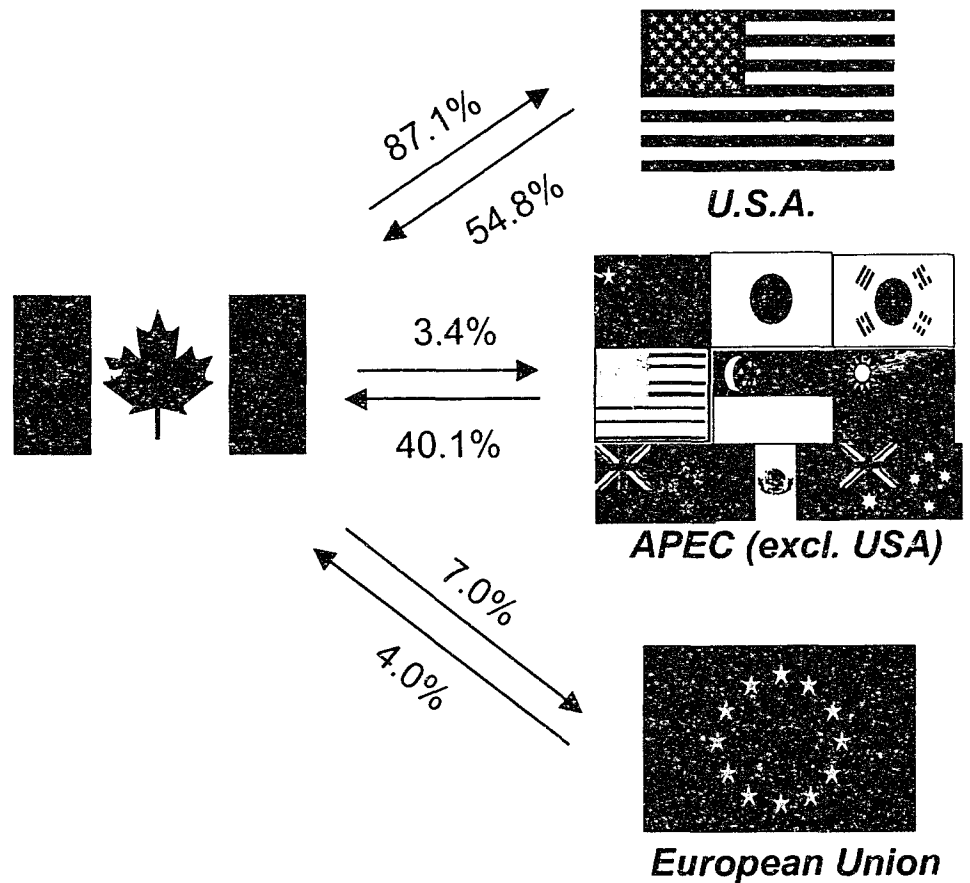


# The ICT Manufacturing Trade by Sub-sector and Region

Trade in Computer Equipment, 1990-1998



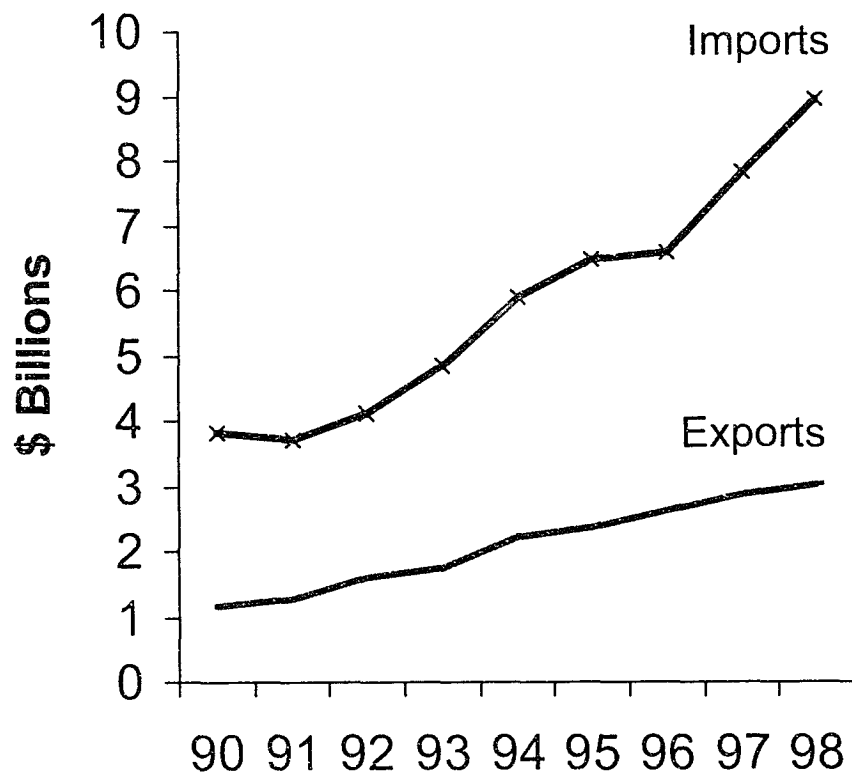
Trade in Computer Equipment, Share by Region, 1998



Source: TIERS, Statistics Canada.

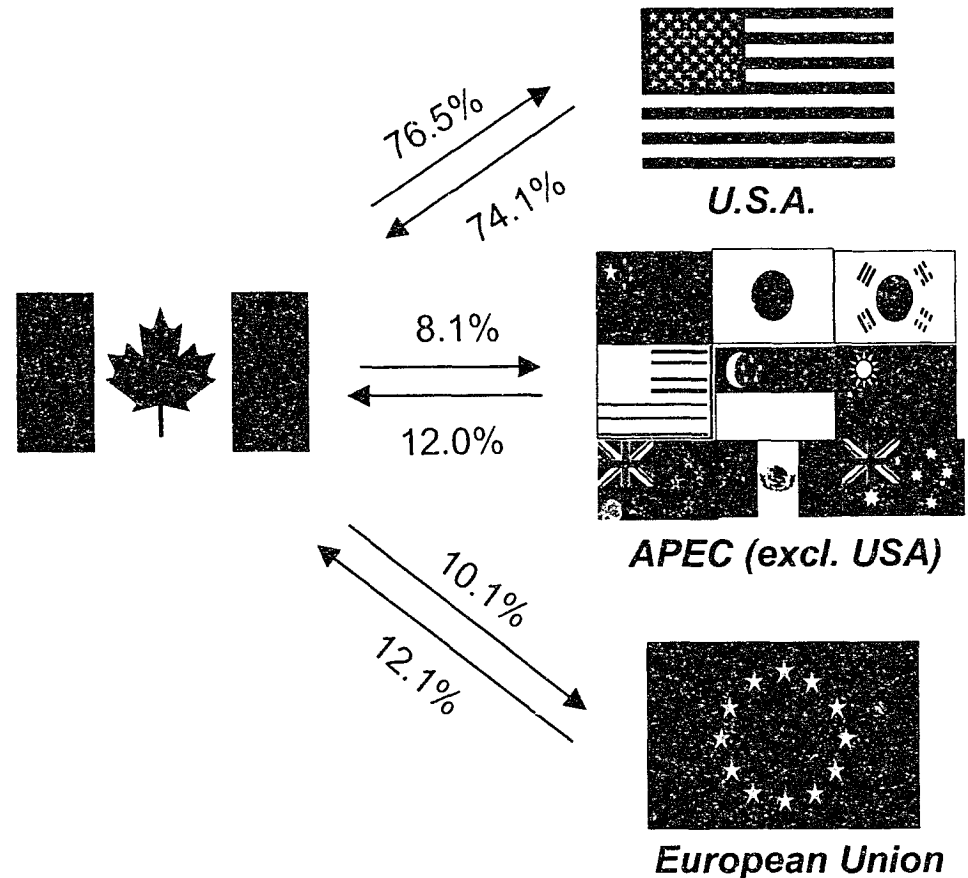
# The ICT Manufacturing Trade by Sub-sector and Region

Trade in Instrumentation, 1990-1998



Source: TIERS, Statistics Canada.

Trade in Instrumentation, Share by Region, 1998







# The ICT Manufacturing Exports by Product

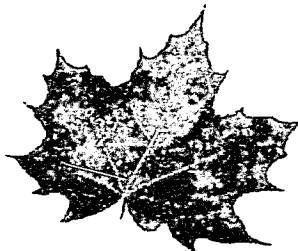
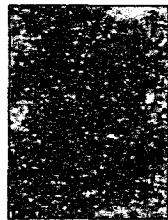
## The Top 15 Canadian ICT Products Exports, 1998

Rank	HS <sup>(1)</sup>	Product Description	Value (\$'000)
1	8473	Parts and accessories of ADP <sup>(2)</sup> machines (incl. power supplies, PCBs)	4,475,834
2	8542	Electronic integrated circuits and microassemblies	4,266,563
3	8517	Electrical apparatus for line telephony, incl. current line phone sets	4,165,062
4	8471	ADP <sup>(2)</sup> machines, incl. computers, peripherals, storage units, controller cards	2,670,291
5	8525	Transmission apparatus for radio-telephony, radio-broadcasting, television	1,812,141
6	8529	Parts suitable for transmission/reception apparatus	595,091
7	8534	Printed circuits	557,433
8	9032	Automatic regulating or controlling instruments and apparatus	533,580
9	8544	Insulated wire/cable and insulated electronic conductors	508,150
10	8805	Flight simulators and parts thereof (8805.20)	460,364
11	8531	Electric sound or visual signaling apparatus (fire alarm/burglar) & parts thereof	334,625
12	9001	Optical fibres	330,971
13	9031	Measuring or checking instruments, appliances and machines & parts thereof	328,673
14	9013	Optical devices, appliances and instruments (incl. lasers) and parts thereof	321,586
15	9018	Instruments and appliances used in vet/med/surg/dental	298,511
		Total Top 15 Products (account for 86% of all ICT products exports)	21,658,875
		Total all ICT Products <sup>(3)</sup>	25,168,741

(1) includes only the 6-digit HS codes specifically related to the ICT sector definition (which is based on SIC codes).

(2) ADP stands for Automatic Data Processing.

(3) slightly different from \$25.1B since the concordance between HS and SIC codes is not 100% accurate for the ICT sector.



# The ICT Manufacturing Imports by Product

## The Top 15 Canadian ICT Products Imports, 1998

Rank	HS <sup>(1)</sup>	Product Description	Value (\$'000)
1	8471	ADP <sup>(2)</sup> machines, incl. computers, peripherals, storage units, controller cards	10,217,324
2	8542	Electronic integrated circuits and microassemblies	8,348,498
3	8473	Parts and accessories of ADP <sup>(2)</sup> machines (incl. power supplies, PCBs)	3,568,177
4	8517	Electrical apparatus for line telephony, incl. current line phone sets	2,870,416
5	9032	Automatic regulating or controlling instruments and apparatus	2,166,376
6	8525	Transmission apparatus for radio-telephony, radio-broadcasting, television	1,828,728
7	8527	Reception apparatus for radio-telephony or radio-broadcasting (incl. 8528)	1,235,058
8	9018	Instruments and appliances used in vet/med/surg/dental	1,217,495
9	8534	Printed circuits	1,170,572
10	8529	Parts suitable for transmission/reception apparatus	1,111,379
11	8528	Reception apparatus such as tv receivers, video monitors, video projectors	959,093
12	9009	Photo-copying apparatus incorporating an optical system	791,964
13	8541	Diodes/transistors and similar semicon devices	640,705
14	8544	Insulated wire/cable and insulated electronic conductors	593,713
15	9030	Oscilloscope, spectrum analyzers and other instruments	560,324
		Total Top 15 Products (account for 82% of all ICT products imports)	37,279,822
		Total all ICT Products <sup>(3)</sup>	45,779,398

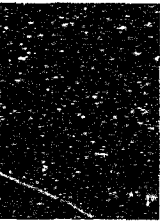
(1) includes only the 6-digit HS codes specifically related to the ICT sector definition (which is based on SIC codes).

(2) ADP stands for Automatic Data Processing.

(3) slightly different from \$45.9B since the concordance between HS and SIC codes is not 100% accurate for the ICT sector.



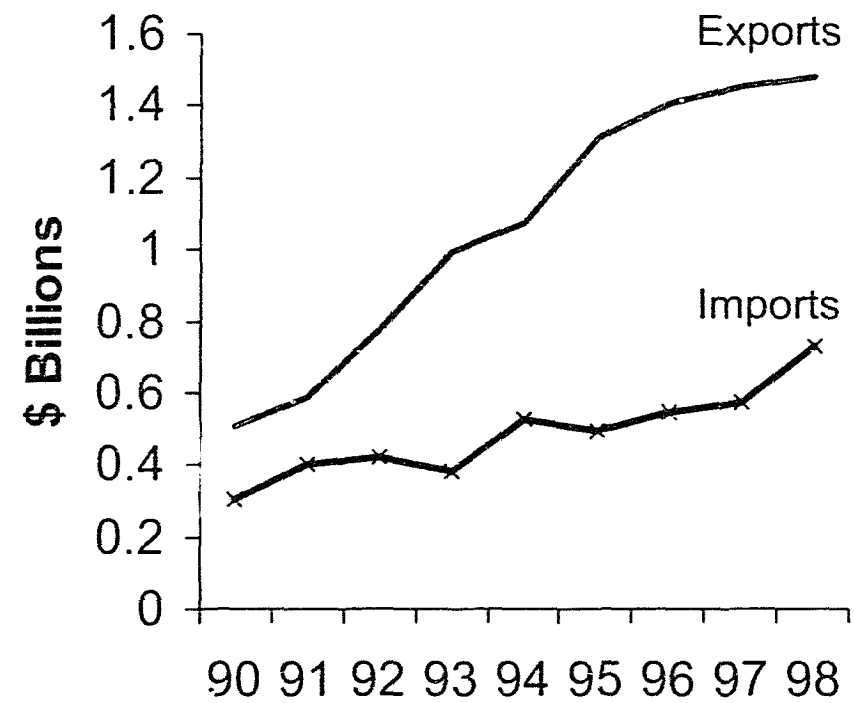
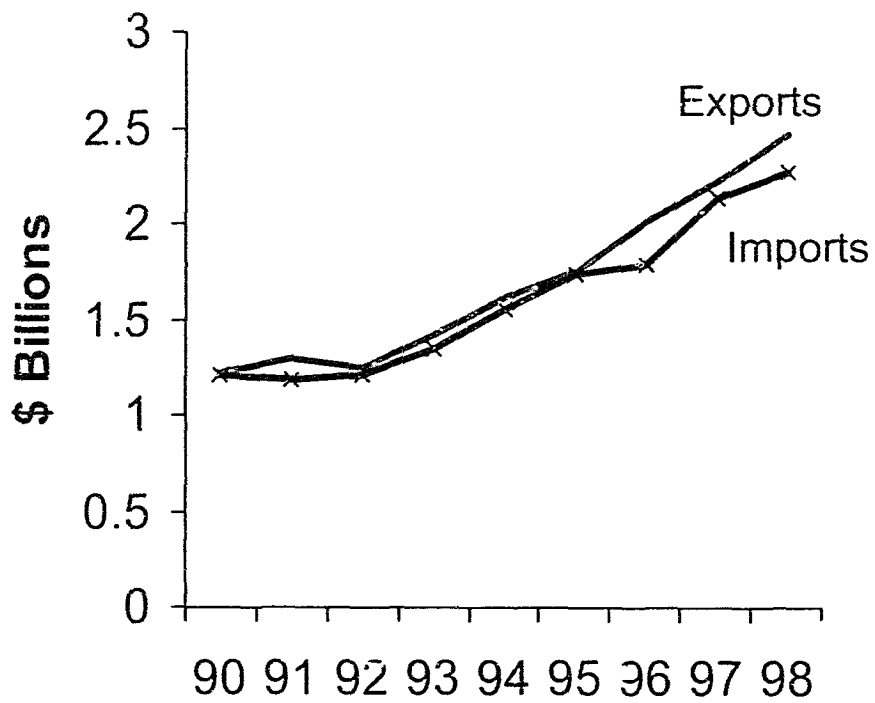
Source: TIERS, Statistics Canada.



# The ICT Services Trade by Sub-sector



Trade in Communications Services, 1990-1998

Trade in Computer Services, 1990-1998



Source: ICT Statistical Review, Industry Canada.





# *Y2K Identified Trade Targets for the ICT Sector*

(To be discussed further)

- Increase total exports by 10% per annum.
- Increase the export diversification beyond the United States
  - ↗ Increase non US share of exports from 18% to 25% by 2002
  - ↗ Focus on Asian countries which represent the strongest growing markets
- Seek more Foreign Direct Investment (FDI) in selected target technologies (e.g. semiconductors) in order to reduce the trade deficit in the ICT manufacturing sector.



# Conclusions

- The ICT sector is of increasing importance to the Canadian economy.
- During the nineties, ICT manufacturing trade increased at a faster rate than Canadian manufacturing trade. As a result, exports and imports of ICT goods have increased their share of total Canadian merchandise trade to 7.9% and 15.4% respectively.
- Despite a somewhat slower growth in exports than the other commercial services throughout the nineties, ICT services still represent a substantial share of the Canadian commercial services trade with 17.8% for exports and 12.3% for imports.
- Exports are crucial to the ICT manufacturing sector. In fact, domestic exports accounted for 77.2% of ICT manufacturing shipments in 1997.
- The ICT manufacturing sector faces a growing trade deficit while the ICT services show a growing positive trade balance. Canada is aggressively seeking FDI in a semiconductor plant which should help substantially to reduce the trade deficit in the ICT manufacturing sector.





## Conclusions (cont'd)

- The US is our major market, accounting for 82% and 59% of our ICT manufacturing exports and imports respectively in 1998.
- However, the APEC countries represent an increasing share of our ICT imports, reaching 31% last year.
- Canada went from the 13th to the 16th rank in terms of global ICT manufacturing exports between 1990 and 1996.
- Despite some improvements in a number of countries, Canada's share of the global export market for ICT goods went down from 1.98% to 1.78% over the 1990-1996 period (and from 8.58% to 7.67% on the US market).
- The strongest growing ICT markets are the Asian countries with growth rates in imports ranging from 180% to 395% between 1990 and 1996. However, this was before the economic crisis of 1998 in Asia (trade data is not available further to 1996 in World Trade Analyzer, UN).
- In view of the information above, we can conclude that there is still room for improvement in Canada's ICT trade performance.



## *ANNEX: Technical Notes*

- In the present document, unless otherwise indicated, the term "exports" means "total exports" which include domestic exports and re-exports. Domestic exports include goods manufactured in Canada, including goods of foreign origin which have been transformed in Canada. Re-exports are exports of foreign goods which have not been materially transformed in Canada, including foreign goods withdrawn for export from bonded customs warehouse. Re-exports accounted for 12% of total ICT manufacturing exports in 1998.
- The Canadian SIC codes that define the ICT sector are :
  - ↗ ICT Manuf. : 3341, 3351, 3352, 3359, 3361, 3362, 3369, 3381, 3911, 3912
  - ↗ ICT Services : 4814, 4821, 4839, 5743, 5744, 5791, 7721, 7722, 9913
- The ICT manufacturing SIC codes are those used in TIERS (Statistics Canada) for the ICT manufacturing trade (i.e. ICT goods or equipment), except for slides no 25 and 26 where HS codes (those related to ICT) were used.
- For ICT services, the computer and communications services are the only two sub-sectors for which trade statistics are available.
- For the wholesaling industries, exports and imports of goods are attributed to their respective ICT manufacturing industries.





## *ANNEX: Technical Notes*

- The SITC codes used in Trade Data Analyzer (United Nations) for the ICT manufacturing sector are :
  - ↗ 75 Office machines & automatic data processing machines
  - ↗ 76 Telecommunications & sound recording apparatus
  - ↗ 772 Electronic apparatus such as switches, relay, fuses
  - ↗ 774 Electronic apparatus for medical purposes
  - ↗ 776 Thermionic, cold and photo-cathode valves
  - ↗ 87 Professional, scientific & controlling instruments
  - ↗ 881 Photographic apparatus and equipment, n.e.s.
  
- Area Definitions :
  - ↗ APEC (excluding USA) : Member countries of the Asia-Pacific Economic Cooperation (APEC) excluding the United States and Canada: Australia, Brunei, Chile, China, Hong Kong (China), Indonesia, Japan, South Korea, Malaysia, Mexico, New Zealand, Papua New Guinea, Peru, Philippines, Russia, Singapore, Taiwan, Thailand and Vietnam.
  - ↗ European Union (EU) : Total for the 15 member states: France, Belgium, Luxembourg, Germany, Italy, Netherlands, Spain, Portugal, United Kingdom, Ireland, Greece, Denmark, and (since 1995) Austria, Sweden and Finland.

