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Rescuing Innovation in a Deep Economic Recession

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GDP growth in the G7 economies ¹

	Annualised quarter-on-quarter growth								Year-average growth in 2009	
	08Q1	08Q2	08Q3	08Q4	09Q1	09Q2	09Q3	09Q4	EO85 projection ²	Implied projection ³
United States	-0.7	1.5	-2.7	-5.4	-6.4	-1.0	1.6 (+/-1.9)	2.4 (+/-2.4)	-2.8	-2.8
Japan	3.9	-4.3	-3.9	-13.1	-11.7	3.7	1.1 (+/-2.9)	-0.9 (+/-2.8)	-6.8	-5.6
Euro Area	3.1	-1.5	-1.5	-7.1	-9.2	-0.5	0.3 (+/-1.3)	2 (+/-1.6)	-4.8	-3.9
Germany	6.5	-2.2	-1.3	-9.4	-13.4	1.3	4.2 (+/-2.2)	1.8 (+/-2.3)	-6.1	-4.8
France	1.8	-1.9	-0.9	-5.5	-5.3	1.4	1.6 (+/-1.3)	1.9 (+/-1.7)	-3.0	-2.1
Italy	2.0	-2.2	-3.1	-8.3	-10.3	-1.9	-1.1 (+/-1.7)	0.4 (+/-2)	-5.5	-5.2
UK	3.2	-0.2	-2.9	-7.0	-9.3	-2.6	-1 (+/-1.2)	0 (+/-1.2)	-4.3	-4.7
Canada	-0.7	0.3	0.4	-3.7	-6.1	-3.4	-2 (+/-1.6)	0.4 (+/-2.1)	-2.6	-3.0
G7	1.4	-0.5	-2.5	-7.3	-8.4	-0.1	1.2 (+/-1.8)	1.4 (+/-2.1)	-4.1	-3.7

1. GDP releases and high-frequency indicators published by 2nd September 2009. Seasonally and in some cases also working-day adjusted. Associated standard errors are in parentheses.

2. Finalised in June 2009.

3. The implied projection is calculated by mechanically extending the GDP outturn data up to the second quarter of 2009 with the indicator model projections for the third and fourth quarters. This means that differences between the column "EO85 projection" and "Implied projection" reflect both revisions in historical data and the Q3 and Q4 GDP projections.

Source: OECD, "Interim Economic Assessment for OECD countries", Thursday 3 September 2009

Real total gross fixed capital formation

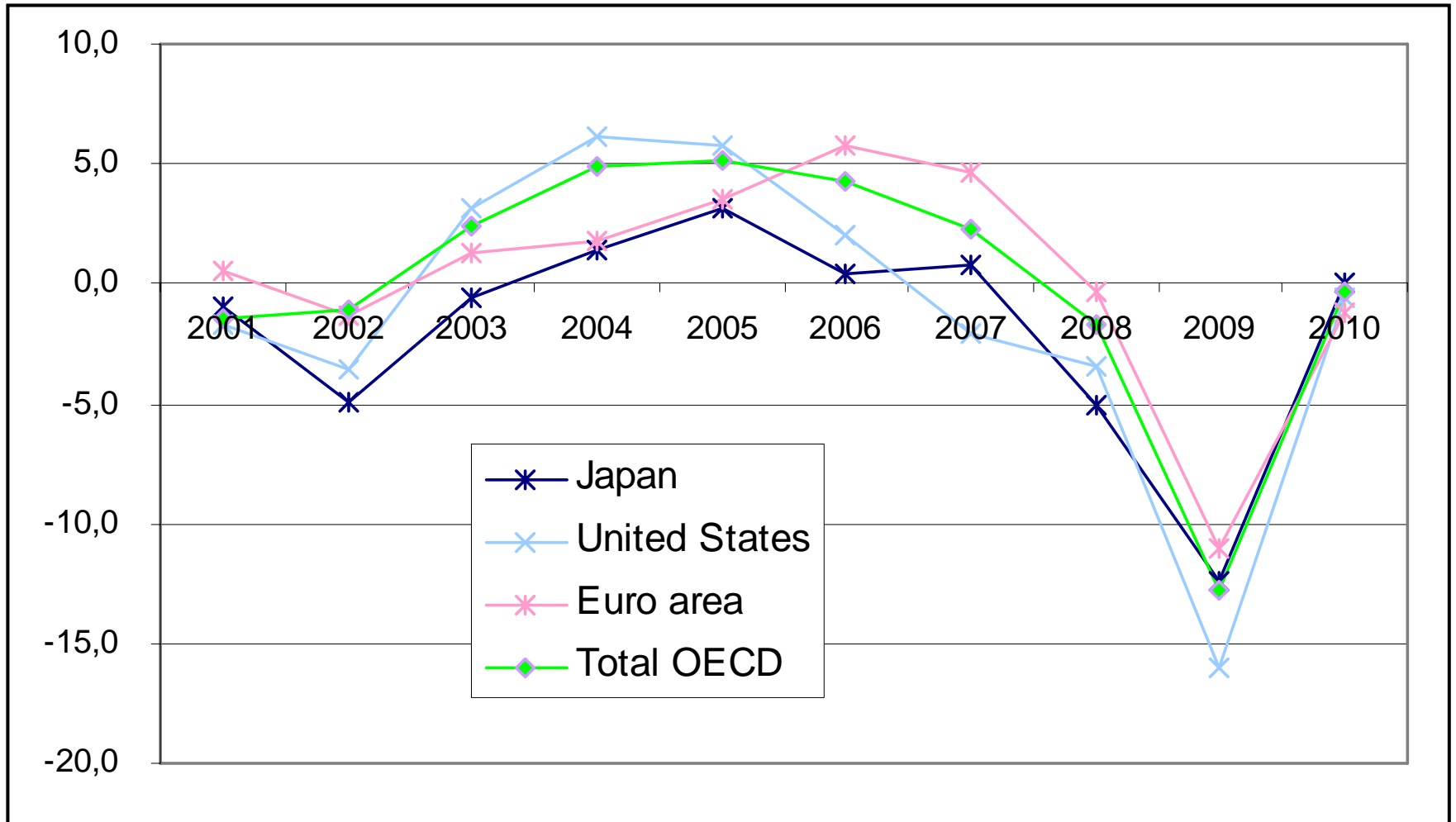
Percentage change from previous year

	2007	2008	2009	2010	Fourth quarter		
					2008	2009	2010
Belgium	6,1	5,1	-5,2	-4,8	2,1	-7,5	-3,5
Canada	3,7	0,9	-10,1	1,3	-3,7	-8,4	4,7
France	6,5	0,4	-7,4	-0,3	-4,1	-6,3	2,9
Germany	4,5	3,6	-10,9	0,2	-0,5	-9,5	1,7
Italy	1,6	-2,9	-12,7	1,5	-8,7	-9,0	4,6
Japan	0,8	-5,0	-12,3	0,0	-7,6	-8,0	0,0
United Kingdom	6,8	-3,1	-12,5	-4,2	-8,0	-14,5	1,6
United States	-2,0	-3,5	-16,0	-0,6	-6,8	-14,3	3,3
Euro area	4,6	-0,3	-11,1	-1,3	-5,1	-9,5	1,4
Total OECD	2,3	-1,7	-12,8	-0,3	-5,9	-11,1	3,1

Source: OECD, "Economic Outlook", June 2009

Real total gross fixed capital formation

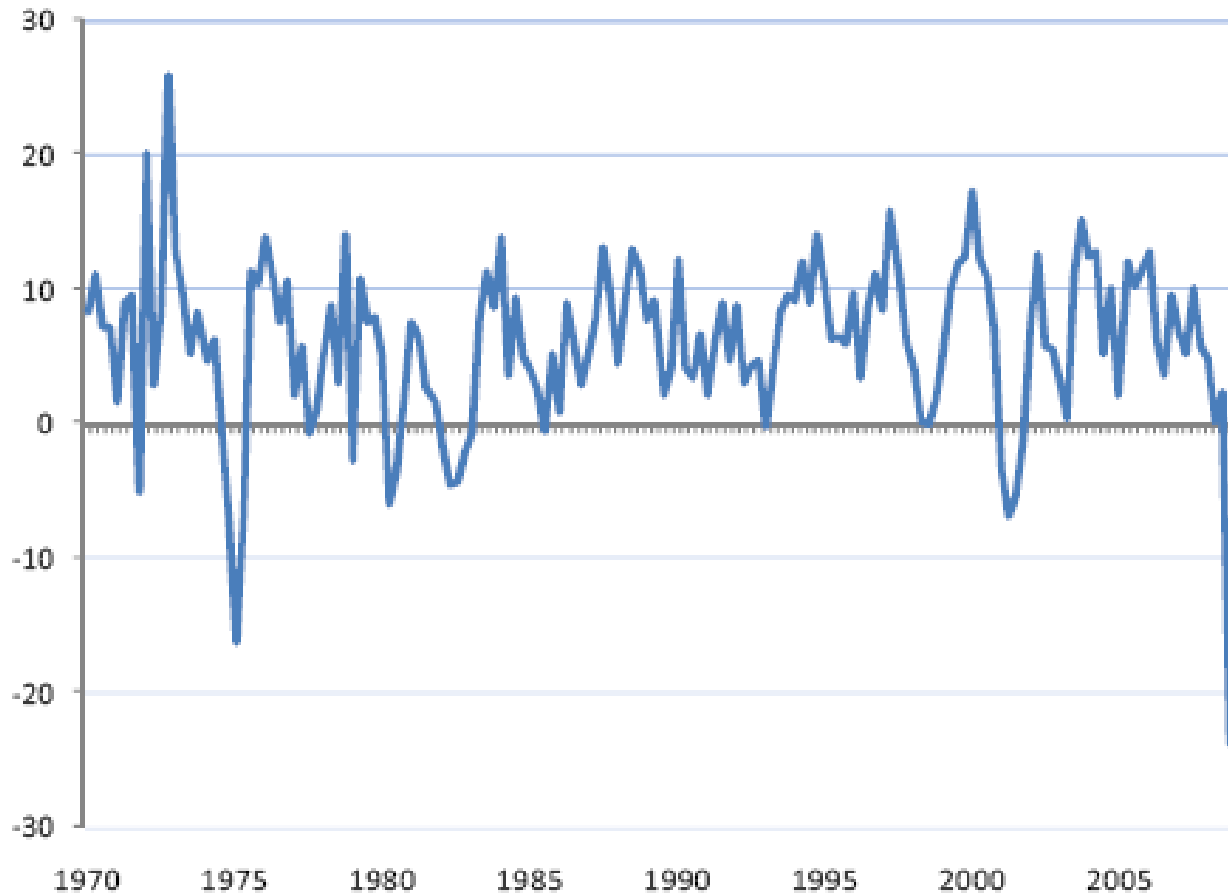
Percentage change from previous year



Source: OECD, "Economic Outlook", June 2009

The World Trade

Annualised quarter on quarter growth (%)



Note: The first quarter of 2009 is an estimate.

Source: Policy Responses to the Economic crisis: Investing in Innovation for long-term Growth, OECD, June 2009

The World Trade

Percentage year over year changes

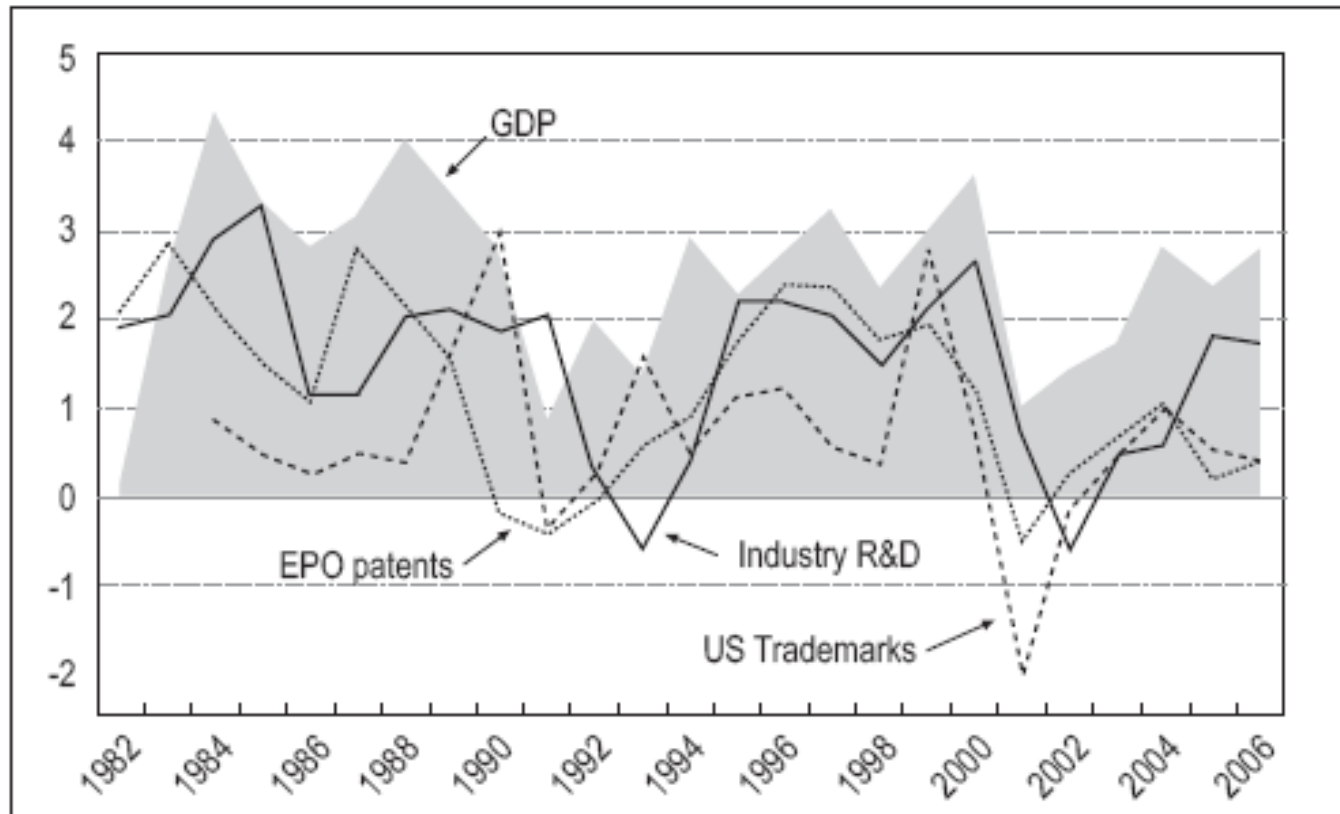
	Projections			
	2007	2008	2009	2010
World Trade Volume	7,2	2,9	-12,2	1,0
Imports				
Advanced economies	4,7	0,4	-13,6	0,6
Emerging and developing econo	13,8	9,4	-9,6	0,8
Exports				
Advanced economies	6,2	2	-15	1,3
Emerging and developing econo	9,5	4,1	-6,5	1,4

Difference from April 2009 WEO Projections	
2009	2010
-1,2	0,4
-1,5	0,2
-0,8	0,2
-1,5	0,8
-0,1	0,2

Source: IMF, World Economic Outlook Update, July 8, 2009

The impact of the business cycle on innovation

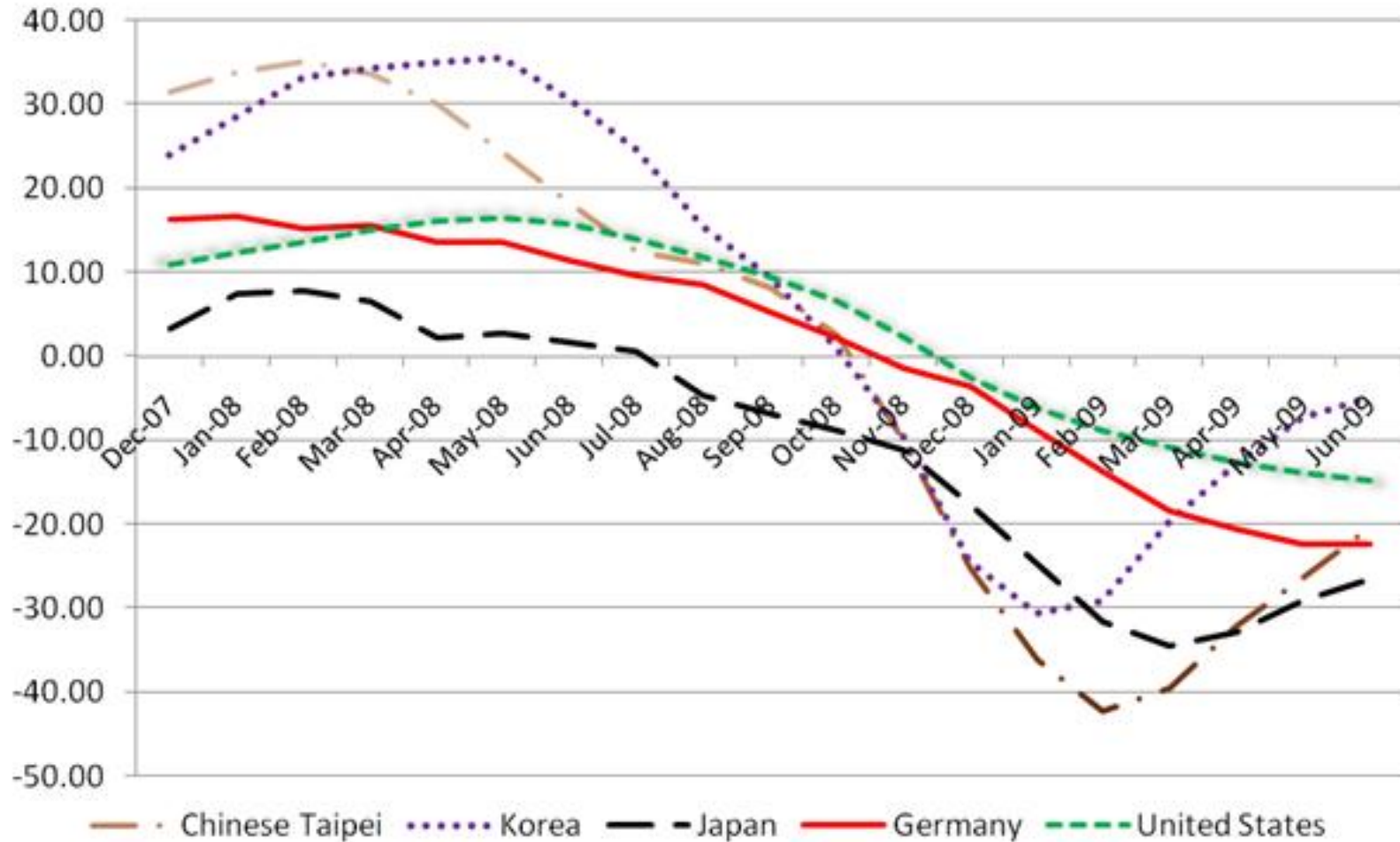
Business-funded R&D, patents (applications to the European Patent Office), trademarks (filed at the US Patent and Trademark Office) and GDP (Annual growth rate for the total of OECD countries; divided by standard deviation)



Source: OECD, MSTI and Patent database.

Production in ICT goods

Percentage monthly changes on yearly basis

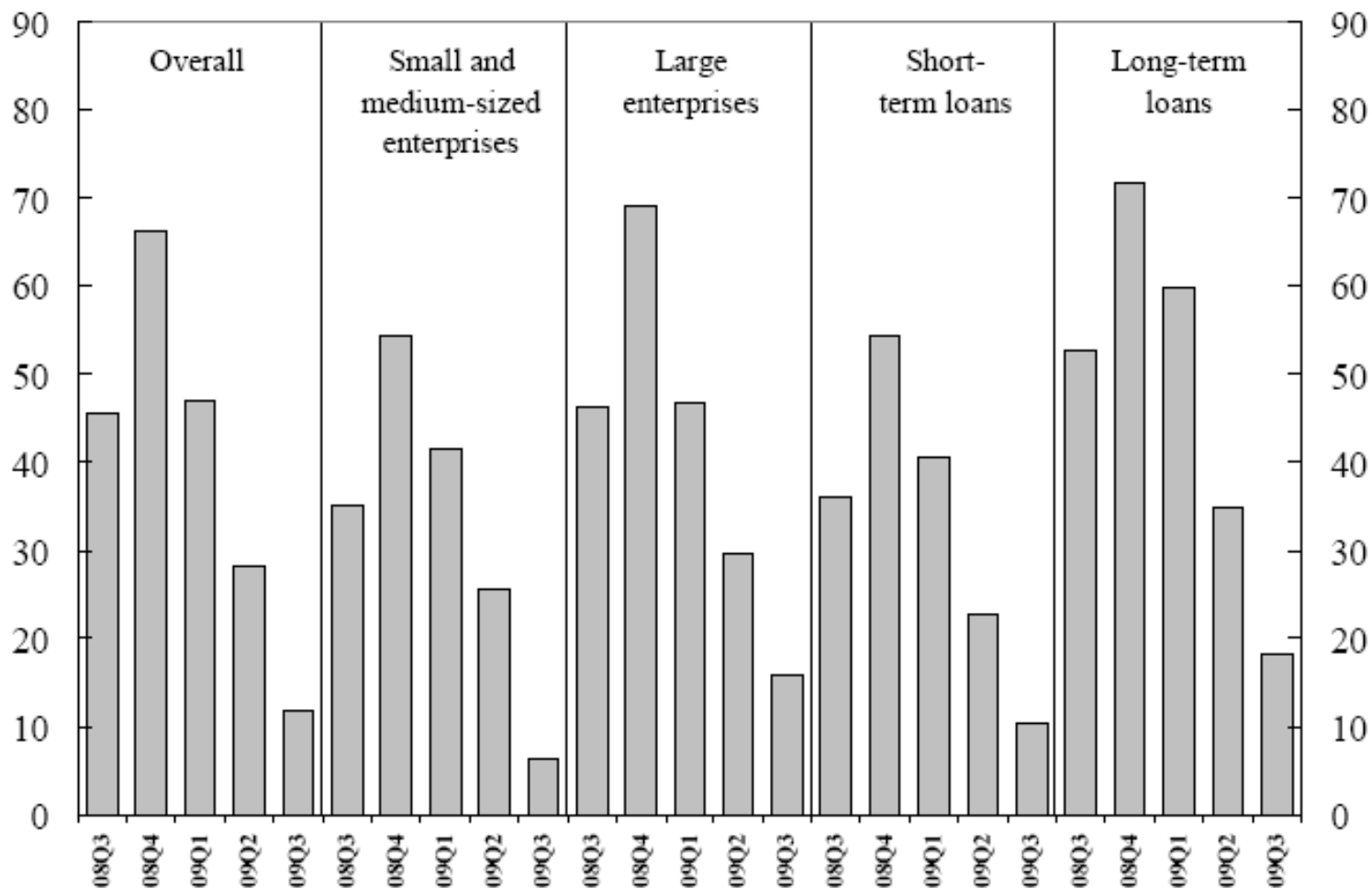


Source: ICT industry poised to rebound, OECD, 2009

Credit standards for the approval of loans or credit lines to enterprises

Euro Area: 08Q3 – 09Q3

(changes in net percentages of banks expecting tightening credit standards)

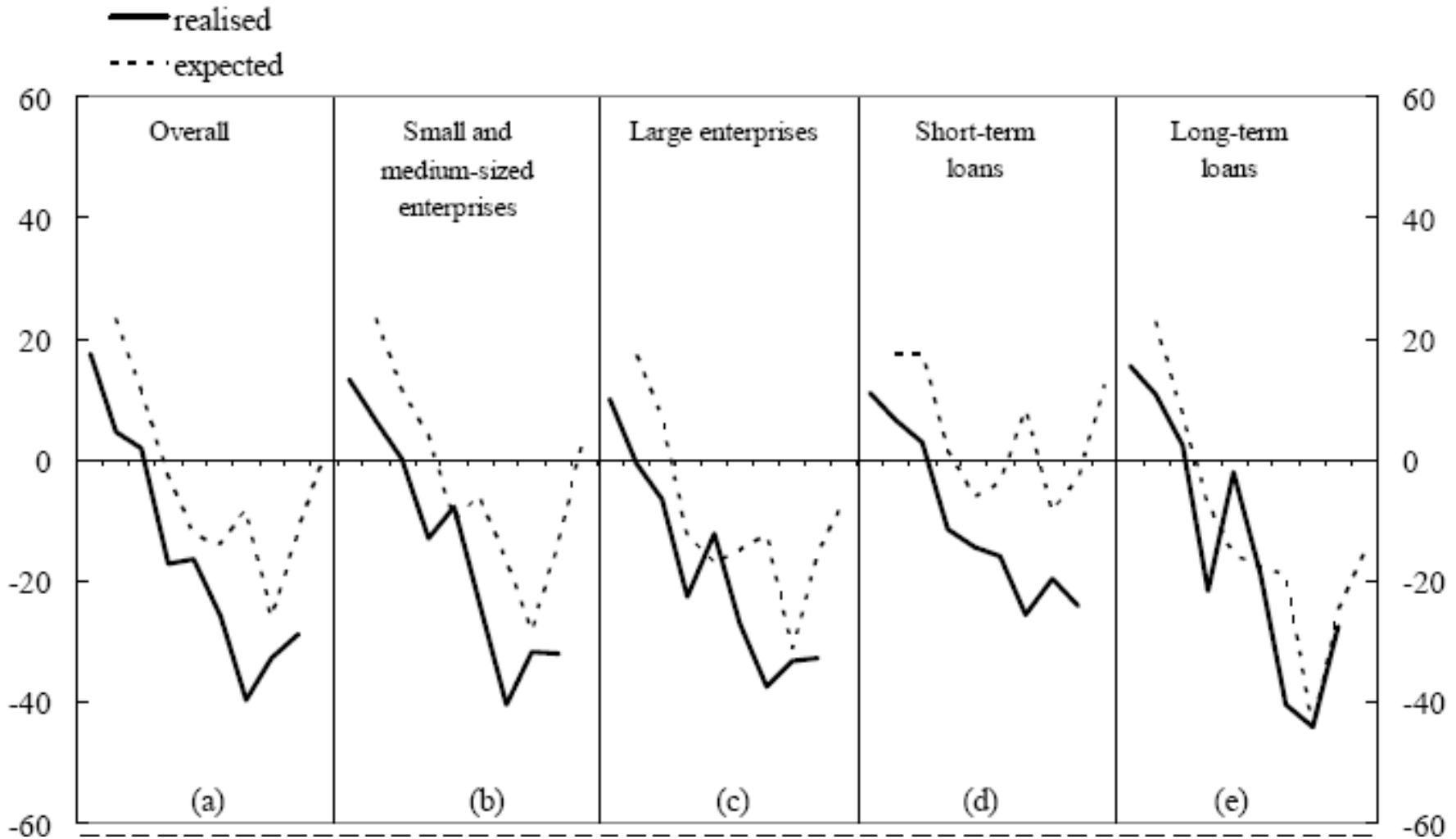


Source: European Central Bank, "The Euro Area Bank Lending Survey", July 2009

Demand for loans and credit lines by enterprises

Euro Area: 07Q2 – 09Q3

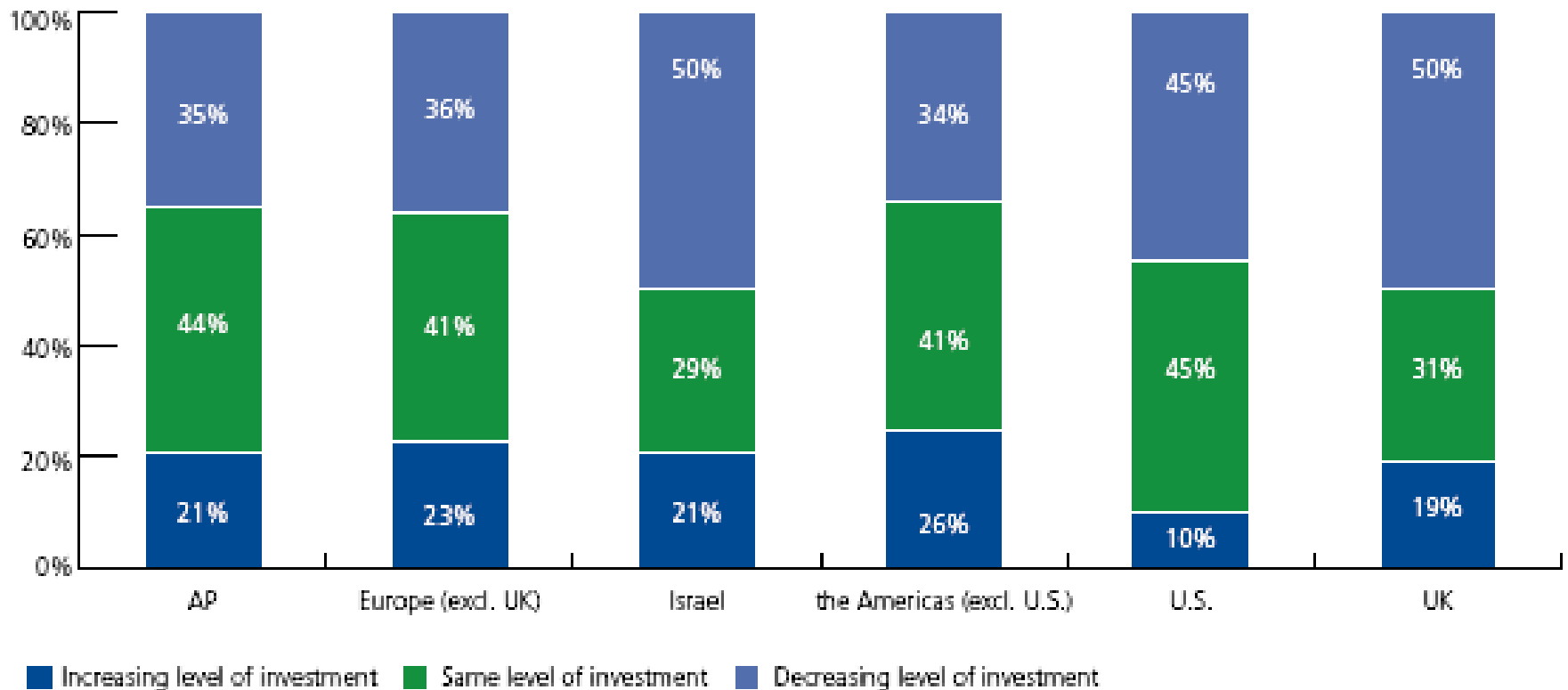
(changes in net percentages of banks reporting positive loan demand)



Source: European Central Bank, "The Euro Area Bank Lending Survey", July 2009

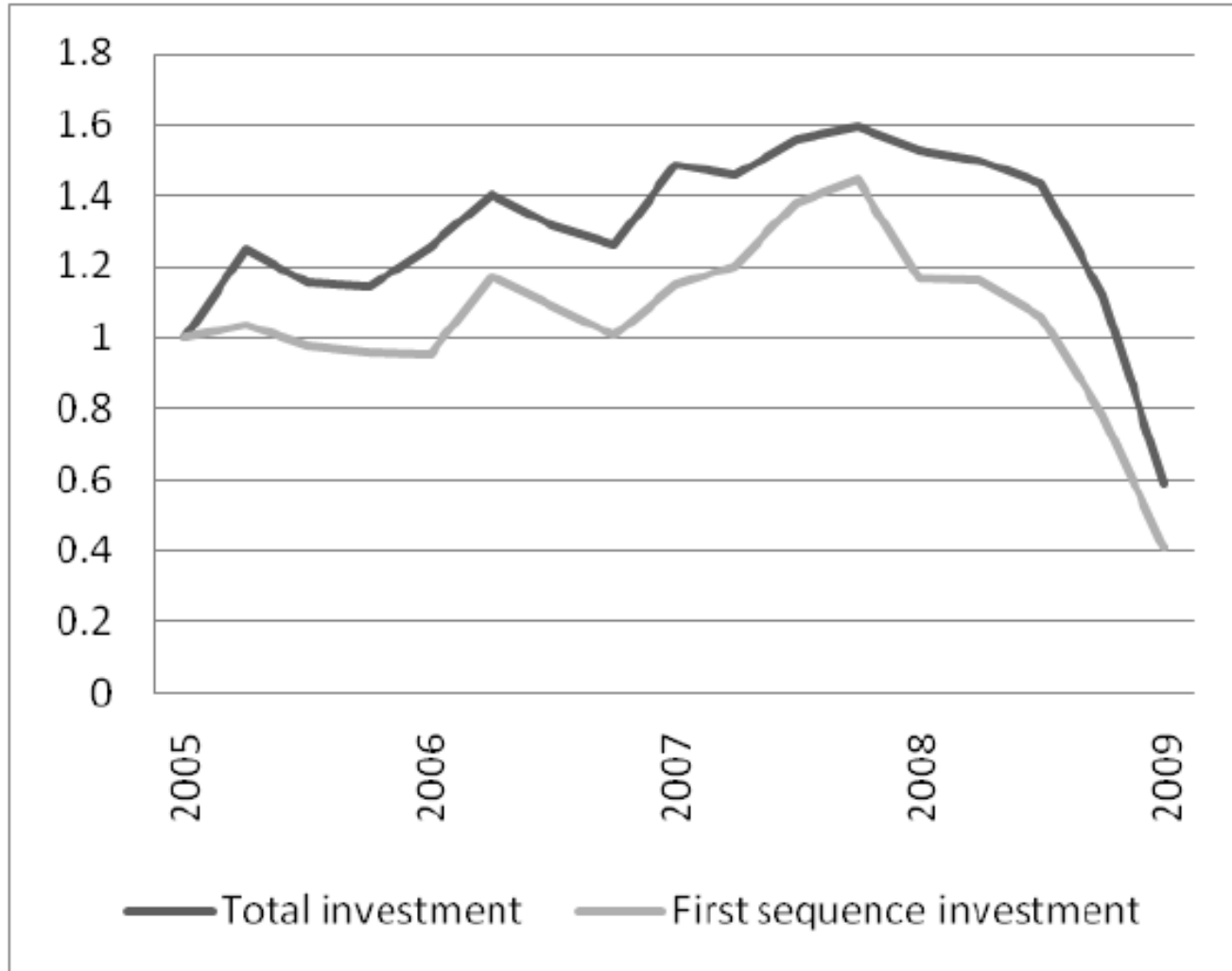
Venture Capital Investment

Impact of the global recession on investment strategies



Source: Global Trends in Venture Capital 2009 Global Report, Deloitte, 2009

Venture capital investment in the United States, index: 2005 Q1 = 1



Source: PricewaterhouseCoopers and National Venture Capital Association.

In house innovation by SMEs (% of SMEs)

	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>
Finland	33,96	33,96	33,96	37,42	40,89	44,67	48,81
Germany	46,15	46,15	46,15	46,22	46,29	46,36	46,43
Sweden	41,83	41,83	41,83	41,83	41,83	41,83	41,83
Cyprus	33,75	33,75	33,75	35,65	37,55	39,55	41,66
Denmark	40,81	40,81	40,81	40,81	40,81	40,81	40,81
Austria	42,32	42,32	42,32	41,69	41,05	40,43	39,81
Belgium	42,90	42,90	42,90	41,86	40,81	39,80	38,80
Portugal	33,39	33,39	33,39	33,75	34,10	34,46	34,82
Switzerland	34,40	34,40	34,40	34,40	34,40	34,40	34,40
Estonia	40,35	40,35	40,35	38,70	37,05	35,48	33,97
Greece	33,45	33,45	33,45	33,08	32,70	32,34	31,97
Ireland	47,72	47,72	47,72	43,24	38,76	34,74	31,14
EU	20,72	20,72	20,72	20,59	20,46	20,34	20,21
Netherlands	26,16	26,16	26,16	26,71	27,26	27,82	28,39
France	28,27	28,27	28,27	28,27	28,27	28,27	28,27
Turkey	28,18	28,18	28,18	28,18	28,18	28,18	28,18
Italy	28,07	28,07	28,07	28,07	28,07	28,07	28,07
Czech Republic	31,73	31,73	31,73	29,85	27,97	26,21	24,56
Croatia	24,41	24,41	24,41	24,41	24,41	24,41	24,41
Norway	28,10	28,10	28,10	27,01	25,92	24,88	23,88
Spain	26,47	26,47	26,47	25,52	24,57	23,65	22,77
Slovakia	16,03	16,03	16,03	16,98	17,93	18,93	19,99
Romania	16,16	16,16	16,16	17,04	17,93	18,86	19,83
Poland	19,44	19,44	19,44	18,33	17,23	16,19	15,21
Bulgaria	15,14	15,14	15,14	15,14	15,14	15,14	15,14
Lithuania	21,01	21,01	21,01	19,36	17,70	16,19	14,81
Hungary	13,20	13,20	13,20	13,21	13,23	13,25	13,27

Source: elaboration by IPI on EUROSTAT statistics. **Inputed data** (2002-2006), and **extrapolation** (2007-2008)

Governments Policy Response

OECD countries

Australia

Large infrastructure investments (road, rail, housing, and education infrastructure); tax measures; support to construction sector; financial support to pensions, workers, families, home owners and others; support to small enterprises (*e.g.* temporary business investment tax breaks); and training measures.

Austria

Infrastructure (thermal renovation of public buildings, schools); investment incentives through tax measures; support to SMEs (loan guarantees, direct loans, promoting export competitiveness, etc.); regional employment programme; additional R&D spending; and measures relating to day-care.

Belgium

Speeding up of public infrastructure projects and encouraging housing investment; measures to help firms (in particular small ones) to maintain their operations (alleviate financial burden of companies, facilitate payments); safeguarding purchasing power of households; and green technology and energy cost-cutting measures.

Canada

Investments in roads, bridges and public transport, investments in clean water as well as in knowledge and health infrastructure (including post-secondary institutions, research equipment, digitisation of health records, extension of access to broadband services and green energy infrastructure); investments in the renovation and retrofit of social housing and support for home ownership and the housing sector; personal and business tax relief; access to financing, support and training to citizens affected by the crisis; and support to most affected sectors and communities (*e.g.* targeted funding for the auto, forestry, agriculture, and manufacturing industries).

Czech Republic

Increase in public expenditure; lowering of taxes and social insurance contributions and direct assistance to households; and improving the functionality of the sickness insurance system. *A more comprehensive package is currently being debated.*

Denmark

Current measures mostly focused on bank aid and financial measures (beyond the scope of this analysis).

Governments Policy Response *(continued)*

European Union

Infrastructure projects (trans-European transport projects, high-speed Internet); employment support initiative (including for the low-skilled, apprenticeships, training, reduction of social charges, etc.); investment in R&D, innovation and education; access to financing for business; reduction of administrative burdens and promotion of entrepreneurship; increase of climate change and energy security investments; improvement of the energy efficiency in buildings; and promotion of "green products" and the development of clean technologies for cars and construction.

Finland

Measures aimed at the infrastructure (transport construction and broadband); energy and mining sectors; education, research, and training; and others as part of the Finnish Innovation strategy.

France

Mainly investment in public enterprises (post, energy and railways), defense, investments in strategic areas (sustainable development and clean technologies, higher education and research and the digital economy); investment for regional and local authorities (in partnership investment in hospitals, childcare facilities and other social institutions); support to employment, housing, the financing of firms (in particular SMEs), health, and some measures for the environment. Special measures targeted at the automobile sector.

Germany

Infrastructure (particularly schools and universities, also measures to foster broadband); measures to help businesses and households retain employment and overcome the crisis (secure funding, government guarantees, reduction of non-wage labour costs, income tax cut and other means to ease burden on households – *e.g.* payments for children); training and upgrading grants (raising levels of education); fostering innovation and R&D; green technologies. Special measures targeted at the automobile sector.

Hungary

Accelerating construction projects of national importance; simplifying the application system of the National Development Plan; simplifying construction regulation, financial measures to ease financing of (small) firms (including microfinance, venture capital and interest subsidies); easing the administrative burden of firms; and R&D and Innovation support.

Governments Policy Response (*continued*)

Iceland

Despite heavy impact of crisis, the full operation of automatic stabilizers is guaranteed; measures for unemployed and benefits to the self-employed; improving the financial capacity of households, mortgage payment adjustment for homeowners; payment adjustments for businesses (*e.g.* postponing the payment of VAT); and measures to stimulate employment, including through the acceleration of labour-intensive transportation investment projects.

Italy

Stimulating investments on infrastructures and research (including broadband); supporting low-income households (tax cuts for poorer families and pensioners); reducing the tax burden for SMEs; focus on greening the automobile sector and support to methane systems and the purchase of ecological cars.

Japan

Support for household consumption; tax reductions on mortgages; benefits for dependent persons; cutting of healthcare costs; creation of new public-sector jobs in nursing, retirement homes and childcare, and jobs relating to the protection of the environment; raising the self-sufficiency ratio of food; funds on a priority basis to research in advanced technologies and related research; and reduction of taxes for eco-friendly cars.

Korea

Focus on sustaining green technology and value-added services to build new engines of growth (including sustainable energy, technologies to reduce greenhouse gas emissions, information technologies as well as healthcare and tourism).

Luxembourg

Support of purchasing power through targeted measures; support of business activity through tax measures and financial support; of business activity through public investments; direct support of enterprises in difficulty; creation of an administrative environment conducive to economic activity; support tackling the effects of the crisis on employment; and measures to prepare growth after the crisis.

Governments Policy Response *(continued)*

Mexico

Transport infrastructure programme; Temporary Employment Programme and the Programme to Preserve Employment; protection of family incomes (extending the social health care coverage, freeze on energy prices, and supporting households to change old home appliances to energy-saving equipment); supporting SMEs by reducing electricity prices, increasing credit availability and using government procurement targeted at SMEs.

Netherlands

Measures focused on problems in the housing market; export credit insurance; help for medium-sized companies; and measures aimed at the health care sector. Additional package of measures aimed at sustainability, innovation, education, the labour market, infrastructure and construction.

Norway

Tax relief and measures for employment, welfare and the environment. Emphasis on municipalities (schools, nursing homes, churches); construction (in particular transport and buildings with energy efficiency in mind); employment, readjustment and skills; business R&D (direct grants and grants for PhD-students) and ICTs (infrastructure, digitising of government services, electronic signature, etc.). Also, focus on green measures.

Poland

Facilitating investment financed from EU funds; stimulating investment in telecommunication infrastructure; financing for enterprises, especially SMEs (including credit guarantees, micro-finance); support to R&D; and focus on renewable energy.

Portugal

Public investment in education (modernisation of schools); energy (especially transmission infrastructures and renewable energy) and new-generation technologies (broadband networks); promotion of economic activity and employment (creation of fund for industrial restructuring, financing facilities to SME and exporting enterprises; new corporate tax benefits; reductions of social contributions in special cases; education/training programmes); strengthening of social protection; investments in R&D; and support to the automotive sector.

Slovak Republic

Infrastructure (roads, high-speed broadband, new atomic reactors); transfer of financial sources from basic research to applied research and innovation; reallocation of funds to SMEs and venture capital; and increase energy efficiency.

Governments Policy Response (*continued*)

Spain

Tax cuts; spending on public works and other stimulus measures to raise employment rates; liquidity to credit-strapped companies (especially SMEs) and households (families, in particular); special help to the automobile sector and modernising of basic industries such as transportation, energy, services and telecommunications; and modernisation of the public civil service.

Switzerland

Railway and road infrastructure; energy efficiency of buildings; tourism industry; and export promotion.

Turkey

Tax cuts (on income, businesses and consumption); other revenue and fiscal measures; credit facilities and guarantee schemes for SMEs; contributions for public pensions; measures to reduce unemployment; support to health care; and measures targeted at increasing economic competitiveness (details to be confirmed).

United Kingdom

Cut in value-added tax rate; acceleration of capital investment projects (likely to include some research infrastructure) and for accelerated roll-out of broadband; credit line and loan guarantees (in particular for SMEs); and measures to combat unemployment (*e.g.* paying companies to hire and train the unemployed).

United States

Direct relief to working and middle-class families (tax credit, expansion of unemployment insurance, state fiscal reliefs, etc.); large infrastructure investments (roads, public transit, high speed rail, smart electricity grid and broadband); protecting health care coverage of citizens and modernising the health sector (including its computerisation and digital health records); increased funding for key scientific and engineering agencies; modernisation of classrooms; laboratories and libraries; and fostering renewable energy production and investments.

Governments Policy Response (*continued*)

OECD accession countries

Estonia

Infrastructure (water management, transport, municipal infrastructure, etc.); vocational education and health service infrastructure; support to firms (loan and export guarantees, technology and development incentives, etc.); support to the construction sector; entrepreneurship measures; occupational training and active labour market measures; and energy-saving measures for housing.

Israel

Tax reductions; infrastructure investments (desalination plants, railways); credit lines for business (especially SMEs) and export credits; funds to hire workers and retraining; and support to R&D.

Chile

Early tax returns; Construction of new public infrastructure and investment by public companies; financial resources to SMEs and the economy through fiscal guarantee schemes; subsidies to housing market; and employment protection (including subsidies to hire younger workers).

Russia

Tax cuts; enhancement of social welfare; provision of healthcare and social guarantees; state support for employment; maintenance and development of industrial and technological potential; retraining and employment; measures for SMEs; reduction of administrative burdens on businesses: measures to support R&D; and measures supporting energy efficiency.

Slovenia

Measures aimed to infrastructure, energy and environment; support to enterprises (*i.e.* assuring financial liquidity and safeguarding existing jobs, helping company investments, etc.); measures to improve labour market, life-long learning and social security; and increasing expenditure in research and education.

Governments Policy Response (*continued*)

OECD enhanced engagement countries

Brazil

Housing for poor families; credits for firms; and support to the automobile sector.

Indonesia

Infrastructure (mainly roads); education spending; and support to affected industries

India

Value-added tax cut; infrastructure investments (mostly in rural areas); support to social security schemes and housing; measures to help businesses (in particular labour-intensive export sectors, *e.g.* textiles/handicrafts.

China

Low-income housing; rural infrastructure; water; electricity; transportation; the environment; technological innovation and rebuilding after disasters such as earthquakes. Support package to auto and steel industries.

South Africa

Public investment in economic infrastructure; support to low-income workers, the unemployed and vulnerable groups; employment and skills development; effective industrial or sector strategies, higher levels of private sector investment and entrepreneurship; pursue the transformation of the informal economy activities; and improve and streamline government delivery and regulation.

Note: These tables exclude financial or other measures aimed at the liquidity of the financial system / the banking sector.

Source: OECD based on publicly available stimulus plans, announcements and replies to the OECD questionnaire in the case of accession countries (cut-off date end of April 2009). Information for the OECD enhanced engagement countries is provisional and not based on replies to the OECD questionnaire.

Selected long-term policies

	Infrastructure	Science, R&D and innovation	Education	Green technology
Australia	AUD 9.7 billion	AUD 2.9 billion	AUD 15.7-17 billion	AUD 5.7 billion
% of GDP	0.82%	0.25%	up to 1.4%	0.48%
Canada	CAD 20.3 billion	CAD 800 million	1.9 billion	CAD 2.8 billion
% of GDP	1.27%	0.05%	0.12%	0.18%
Chile	USD 700 million	USD 8.8 million	USD 147 million	USD 0
% of GDP	0.50%	0.01%	0.10%	0%
Finland	EUR 910 million	EUR 25 million ¹	EUR 30 million	EUR 38 million
% of GDP	0.48%	0.01%	0.02%	0.02%
France	EUR 4.7 billion	EUR 46 million ²	EUR 731 million	EUR 30 million
% of GDP	0.24%	0.00%	0.04%	0.00%
Germany³	EUR 11.5 billion ⁴	EUR 1.4 billion	EUR 14.5 billion ⁵	EUR 5.7 billion
% of GDP	0.5%	0.1%	0.6%	0.2%
Korea	KRW 50 trillion (USD 36 billion) of green investments (5.14% of GDP) – distributed throughout these categories although a detailed break-down is not yet available.			
Norway	NOK 3.8 billion	NOK 170 million ²	NOK 270 million	NOK 1.6 billion
% of GDP	0.16%	0.01%	0.01%	0.06%
Sweden	SEK 8.6 billion	SEK 9 billion	SEK 500 million	SEK 2 billion
% of GDP	0.27%	0.29%	0.016%	0.06%
Poland	PLN 91,3 billion	PLN 16,8 billion	n.a.	PLN 2.5 billion
% of GDP	0.072%	0.013%	n.a.	0.002%
Portugal	EUR 50 million	EUR 224 million	EUR 682 million ⁶	EUR 260 million
% of GDP	0.03%	0,13%	0.41%	0.16%
USA	USD 100 billion	USD 16 billion	USD 83 bill	USD 59 billion
% of GDP	0.70%	0.11%	0.58%	0.41%
ITALY*	EUR 1,54 billion	EUR 983 million	EUR 970 million	EUR 1,35 billion
% of GDP	0,10%	0,06%	0,06%	0,09%

Source: Policy Responses to the Economic crisis: Investing in Innovation for long-term Growth, OECD, June 2009

(*) For Italy: elaboration by IPI

Gvnts need to focus more on drivers of medium-term economic growth, i.e., mainly R%D and innovation

Main tools:

- Budgetary funds
- Standard setting
- Regulation
- Public procurement
- Tax preferences
- Public credit guarantees
- Direct financing trough lending and equity investment
- Credit subsidies
- Public-private partnership in investment and research projects

What matters most is the way tools are used.

Three guiding criteria:

- Preferential treatment for R&D and Innovation projects
- Enhance synergies among different Government interventions
- Attract more private funding through risk sharing schemes

Innovation development require an entire environment and culture conducive to this result

Beside financial instruments, consider:

- fostering the development of platforms to diffuse or disseminate knowledge about innovation
- promoting networking
- establishing standards together with the banking community to evaluate intangible assets
- facilitating exit markets for venture capital investors
- promoting “innovative clusters”
- increasing public investment in innovative infrastructures
- funding financial tutors for new entrepreneurs
- establishing an infrastructure for dialogue and consultation
- subsidizing highly skilled workers to remain active
- labour retraining
- monitoring the changing financial constraints on SMEs

Rescuing innovation is the key to reach higher and more sustainable growth over the medium term.