Innovation matters

- **Innovation influences**
  - Markets
  - Size
  - Education
  - ICT
- **Innovation expenditure**
  - Critical mass
  - Markets
  - Cooperation
  - Education
  - ICT

Innovation matters 2

- **Innovation output**
  - Product and process
  - Scale and fast broadband
- **Productivity**
  - Innovation output
  - Staff quality

Results: Selection equation (1)

Variable	Estimate: Full sample
Size (employment)	
University degree	
Group	
Market Local	
Market National	
Market EU	
Market other foreign	

Results: Selection equation (1)

Variable	Estimate: Full sample
Size (employment)	1%
University degree	
Group	
Market Local	
Market National	
Market EU	
Market other foreign	

Results: Selection equation (1)

Variable	Estimate: Full sample
Size (employment)	0.1
University degree	1.0
Group	0.1
Market Local	-0.2
Market National	0.3
Market EU	0.2
Market other foreign	0.3

Results: Innovation input (2)

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Variable	Estimation
Size (employment)	
University degree	
Group	
Cooperation: Own group	
Suppliers	
Customers	
Competitors	
Consultants	
Universities	
Government	
Markets; Local	
National	
EU	
Other foreign	

Results: Innovation input (2)

Variable	Estimation
Size (employment)	
University degree	
Cooperation: Own group	10%
Suppliers	
Customers	
Competitors	
Consultants	
Universities	5%
Government	Non significant
Markets; Local	
National	
EU	
Other foreign	

Results: Innovation input (2)

Variable		Estimation
Size (employment)		-0.1
University degree		3.7
Cooperation:	Own group	0.3
	Suppliers	0.4
	Customers	0.9
	Competitors	0.9
	Consultants	0.9
	Universities	0.5
	Government	0.4
Markets;	Local	-0.3
	National	0.2
	EU	0.6
	Other foreign	0.6

The innovation output (3) for the different productivity specifications

Variable	Estimation
Size	
Group	
Improved production methods	
Improved distribution methods	
Improved support methods	
Predicted value of innovation input	

The innovation output (3) for the different productivity specifications

Variable	Estimation
Size	
Group	
Improved production methods	
Improved distribution methods	
Improved support methods	
Predicted value of innovation input	

The innovation output (3)

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Variable	Estimation
Size	*0.7*
Group	*0.3*
Improved production methods	*0.2*
Improved distribution methods	*0.3*
Improved support methods	*0.1*
Predicted value of innovation input	*0.2*

Results of the different specifications of the productivity equation (4)

Variable	Value added labour productivity 2004
Group	
Size	
Capital intensity	
Human capital	
Innovation output (estimated)	

Results of the different specifications of the productivity equation (4)

Variable	Value added labour productivity 2004
Group	
Size	
Capital intensity	
Human capital	
Innovation output (estimated)	

Results of the different specifications of the productivity equation (4)

Variable	Value added labour productivity 2004
Group	0.1
Size	0.4
Capital intensity	0.1
Human capital	0.7
Innovation output (estimated)	0.4

2004

Results of the different specifications of the productivity eqation (4)

Variable	Value added labour productivity 2004	Gross production multifactor productivity 2004
Group	0.1	
Size	0.4	
Capital intensity	0.1	
Human capital	0.7 2004	
Innovation output (estimated)	0.4	

Results of the different specifications of the productivity eqation (4)

Variable	Value added labour productivity 2004	Gross production multifactor productivity 2004
Group	0.1	-0.02
Size	0.4	0.03
Capital intensity	0.1	-0.1
Human capital	0.7 2004	0.5 2004
Innovation output (estimated)	0.4	0.08

Results of the different specifications of the productivity equation (4)

Variable	Value added labour productivity 2004	Gross production multifactor productivity 2004	Gross production multifactor productivity 2002-2004
Group	0.1	-0.02	
Size	0.4	0.03	
Capital intensity	0.1	-0.1	
Human capital	0.7 2004	0.5 2004	
Innovation output (estimated)	0.4	0.08	

Results of the different specifications of the productivity equation (4)

Variable	Value added labour productivity 2004	Gross production multifactor productivity 2004	Gross production multifactor productivity 2002-2004
Group	0.1	-0.02	-0.04
Size	0.4	0.03	-0.1
Capital intensity	0.1	-0.1	-0.05
Human capital	0.7 2004	0.5 2004	0.7 2002-2004
Innovation output (estimated)	0.4	0.08	0.2

Construction of composite indicator for ICT use

- Internet use
- Business system integration
- Online purchasing
- Online sales
- ICT use level =Internet use + business system integration level+0.1* (online purchasing in percent + online sales in percent)

The Innovation selection equation, full sample and ICT

	Estimates	
Group	Full sample	ICT sample
Size	0.1	
University degree	0.1	
Markets;	1.1	
Local		
National	-0.2	
EU, EFTA	0.3	
Other Countries	0.2	
ITC-level 2002	0.3	

The Innovation selection equation, full sample and ICT

	Estimates	
	Full sample	ICT sample
Group	0.1	
Size	0.1	
University degree	1.1	
Markets;		
Local	-0.2	
National	0.3	
EU, EFTA	0.2	
Other Countries	0.3	
ITC-level 2002		

The Innovation selection equation, full sample and ICT

	Estimates	
	Full sample	ICT sample
Group	0.1	0.03
Size	0.1	0.07
University degree	1.0	0.5
Markets;		
Local	-0.2	-0.6
National	0.3	0.3
EU, EFTA	0.2	-0.06
Other Countries	0.3	0.7
ITC-level 2002		0.04

The Innovation input equation, the full sample and ICT sample compared

Variable		Full sample	ICT sample
Size		-0.1	
University degree		3.7	
Geographic markets:	Local	-0.3	
	National	0.2	
	EU, EFTA	0.6	
	Other countries	0.6	
Cooperations:	In the Group	0.3	
	Suppliers	0.4	
	Customers	0.9	
	Competitors	0.9	
	Consultants	0.9	
	Universities	0.5	
IT-level 2002		---	

The Innovation input equation, the full sample and ICT sample compared

Statistics Sweden
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Variable		Full sample	ICT sample
Size		-0.1	
University degree		3.7	
Geographic markets:	Local	-0.3	
	National		
	EU, EFTA	0.6	
	Other countries	0.6	
Cooperations:	In the Group	0.3	
	Suppliers	0.4	
	Customers	0.9	
	Competitors	0.9	
	Consultants	0.9	
	Universities	0.5	
IT-level 2002		---	

The Innovation input equation, the full sample and ICT sample compared

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Variable		Full sample	ICT sample
Size		-0.1	-0.1
University degree		3.7	3.7
Geographic markets: Local		-0.3	0.3
National		0.2	0.4
	EU, EFTA	0.6	0.9
	Other countries	0.6	0.9
Cooperations:	In the Group	0.3	0.9
	Suppliers	0.4	0.5
	Customers	0.9	0.4
	Competitors	0.9	-0.3
	Consultants	0.9	0.2
	Universities	0.5	0.6
IT-level 2002		---	0.6

The innovation output equation, the full sample and ICT sample compared

	Example: With Value added labour productivity in the production function	
Sample	**Full sample**	**ICT sample**
Size	**0.7**	
Predicted value of innovation input	**0.2**	
Improved production methods	**0.2**	
Fast Broadband 2002	**---**	

The innovation output equation, the full sample and ICT sample compared

	Example: With Value added labour productivity in the production function	
Sample	**Full sample**	**ICT sample**
Size	**0.7**	
Predicted value of innovation input	**0.2**	
Improved production methods	**0.2**	
Fast Broadband 2002	**---**	

The innovation output equation, the full sample and ICT sample compared

	Example: With Value added labour productivity in the production function	
Sample	**Full sample**	**ICT sample**
Size	**0.7**	**0.6**
Predicted value of innovation input	**0.2**	**0.2**
Improved production methods	**0.2**	**0.6**
Fast Broadband 2002	**---**	**0.6**

The Productivity equation, the full sample and ICT-sample compared

Productivity specification	Labour	
Sample	Full sample	ICT sample
Size	0.4	
Capital intensity (2004 level)	0.1	
Human capital (2004 level respectively the change 2002-04)	0.7	
Innovation output (estimated)	0.4	

The Productivity equation, the full sample and ICT-sample compared

Productivity specification	Labour	
Sample	Full sample	ICT sample
Size	0.4	
Capital intensity (2004 level)	0.1	
Human capital (2004 level respectively the change 2002-04)	0.7	
Innovation output (estimated)	0.4	

The Productivity equation, the full sample and ICT-sample compared

Productivity specification	Labour	
Sample	Full sample	ICT sample
Size	0.4	0.3
Capital intensity (2004 level)	0.1	0.2
Human capital (2004 level respectively the change 2002-04)	0.7	0.8
Innovation output (estimated)	0.4	0.4

The Productivity equation, the full sample and ICT-sample compared

Productivity specification	Labour		Multifactor	
Sample	Full sample	ICT sample	Full sample	ICT sample
Size	0.4	0.3	0.04	
Capital intensity (2004 level)	0.1	0.2	-0.1	
Human capital (2004 level respectively the change 2002-04)	0.7	0.8	0.5	
Innovation output (estimated)	0.4	0.4	0.1	

The Productivity equation, the full sample and ICT-sample compared

Productivity specification	Labour		Multifactor	
Sample	Full sample	ICT sample	Full sample	ICT sample
Size	0.4	0.3	0.04	
Capital intensity (2004 level)	0.1	0.2	-0.1	
Human capital (2004 level respectively the change 2002-04)	0.7	0.8	0.5	
Innovation output (estimated)	0.4	0.4	0.1	

The Productivity equation, the full sample and ICT-sample compared

Productivity specification	Labour		Multifactor	
Sample	Full sample	ICT sample	Full sample	ICT sample
Size	0.4	0.3	0.04	0.06
Capital intensity (2004 level)	0.1	0.2	-0.1	-0.1
Human capital (2004 level respectively the change 2002-04)	0.7	0.8	0.5	0.4
Innovation output (estimated)	0.4	0.4	0.1	0.1

The Productivity equation, the full sample and ICT-sample compared

Productivity specification	Labour		Multifactor		Change in Multifactor	
Sample	Full sample	ICT sample	Full sample	ICT sample	Full sample	ICT sample
Size	0.4	0.3	0.04	0.06	-0.1	
Capital intensity (2004 level)	0.1	0.2	-0.1	-0.1	-0.05	
Human capital (2004 level respectively the change 2002-04)	0.7	0.8	0.5	0.4	0.7	
Innovation output (estimated)	0.4	0.4	0.1	0.1	0.2	

The Productivity equation, the full sample and ICT-sample compared

Productivity specification	Labour		Multifactor		Change in Multifactor	
Sample	Full sample	ICT sample	Full sample	ICT sample	Full sample	ICT sample
Size	0.4	0.3	0.04	0.06	-0.1	
Capital intensity (2004 level)	0.1	0.2	-0.1	-0.1	-0.05	
Human capital (2004 level respectively the change 2002-04)	0.7	0.8	0.5	0.4	0.7	
Innovation output (estimated)	0.4	0.4	0.1	0.1	0.2	

The Productivity equation, the full sample and ICT-sample compared

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Productivity specification	Labour		Multifactor		Change in Multifactor	
Sample	Full sample	ICT sample	Full sample	ICT sample	Full sample	ICT sample
Size	0.4	0.3	0.04	0.06	-0.1	-0.07
Capital intensity (2004 level)	0.1	0.2	-0.1	-0.1	-0.05	-0.07
Human capital (2004 level respectively the change 2002-04)	0.7	0.8	0.5	0.4	0.7	2
Innovation output (estimated)	0.4	0.4	0.1	0.1	0.2	0.2

The Productivity equation, the full sample and ICT-sample compared

Statistiska centralbyrån Statistics Sweden

Productivity specification	Labour		Multifactor		Change in Multifactor	
Sample	Full sample	ICT sample	Full sample	ICT sample	Full sample	ICT sample
Size	0.4	0.3	0.04	0.06	-0.1	-0.07
Capital intensity (2004 level)	0.1	0.2	-0.1	-0.1	-0.05	-0.07
Human capital (2004 level respectively the change 2002-04)	0.7	0.8	0.5	0.4	0.7	2
Innovation output (estimated)	0.4	0.4	0.1	0.1	0.2	0.2

What we have shown you

- Market, size, group, education and ICT
  - **influence the decision to innovate**
- These factors and cooperation
  - **influence how much firms innovate**
- Product-, process innovation, education, scale and fast broadband
  - **increases the innovation output**
- Innovation and staff quality
  - **explains productivity level and growth**