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# The adoption of agricultural insurance to manage farm risk: preliminary evidences from a field survey among Italian and Polish farmers

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# INTRODUCTION

✓**Renewed emphasis on RM in AGRICULTURE within the CAP** (Reg. EU n. 1305/2013; Reg. EU n. 2393/2017 - Omnibus Reg.)

**INSURANCE** (against adverse climatic events, animal or plant diseases, pest infestations, environmental incidents):

- reduction of the threshold for indemnification from 30% to 20%
- increase of public support from 65% to 70%
- introduction of index-based insurance schemes

**Participation rates are still below those desired by policy makers:** heterogeneous insurance uptake within Europe and each MS

# LITERATURE

**REASONS OF THE LIMITED PARTICIPATION**

- **Moral Hazard** & **Adverse Selection** (justifying the public intervention)
- **FARMERS' WILLINGNESS TO ADOPT INSURANCE**

**DETERMINANTS OF FARMERS' ADOPTION OF INSURANCE TOOL**

- **Risk Aversion** & **Risk Perception**, **farm and farmer characteristics**, etc.

**Scarcity of in-depth field investigations at farm-level and research in behavioral economics issues related to insurance adoption decision at farm level**

# DATA AND METHODS

- **FIELD SURVEY** (started in December 2017): **direct interviews among farmers**
- 181 farmers: 111 in **Italy** (*Veneto* region) + 70 in **Poland** (*Wielkopolska Voivodeship*)

- **Structured questionnaire:**

- designed on both existing literature and a preliminary survey (22 Polish + 23 Italian farmers) and pre-tested on a small sample of respondents (N = 15)

- statements: **5-pt Likert scales to measure variables** (to measure variables)

- socio-demographics

# RESULTS

## DESCRIPTIVE STATISTICS OF THE SAMPLE

**Sample descriptive statistics – ITALY (N=111)**

| Categories | Description | N. Obs | % | Mean | S.D. |
|---|---|---|---|---|---|
| Gender | 0 - female | 30 | 27.0 | | |
| | 1 - male | 81 | 73.0 | | |
| Age (years) | 1 - less than 35 | 47 | 42.3 | | |
| | 2 - 35-44 | 30 | 27.0 | | |
| | 3 - 45-54 | 14 | 12.6 | | |
| | 4 - 55-64 | 13 | 11.7 | | |
| | 5 - more than 65 | 7 | 6.3 | | |
| Average farm revenue | 1 - less than 50.000 | 66 | 59.5 | | |
| | 2 - 50.000 - 100.000 | 29 | 26.1 | | |
| (gross income from farming/year) | 3 - 100.000 - 250.000 | 11 | 9.9 | | |
| | 4 - more than 250.000 | 5 | 4.5 | | |
| Utilised agricultural area (UAA) | n. hectares | | | 14.6 | 18.6 |

**Sample descriptive statistics – POLAND (N=70)**

| Categories | Description | N. Obs | % | Mean | S.D. |
|---|---|---|---|---|---|
| Gender | 0 - female | 25 | 35.7 | | |
| | 1 - male | 45 | 64.3 | | |
| Age (years) | 1 - less than 35 | 39 | 55.7 | | |
| | 2 - 35-44 | 16 | 22.9 | | |
| | 3 - 45-54 | 10 | 14.3 | | |
| | 4 - 55-64 | 5 | 7.1 | | |
| | 5 - more than 65 | - | - | | |
| Average farm revenue | 1 - less than 50.000 | 44 | 62.9 | | |
| | 2 - 50.000 - 100.000 | 21 | 30.0 | | |
| (gross income from farming/year) | 3 - 100.000 - 250.000 | 4 | 5.7 | | |
| | 4 - more than 250.000 | 1 | 1.4 | | |
| Utilised agricultural area (UAA) | n. hectares | | | 141.8 | 815.2 |

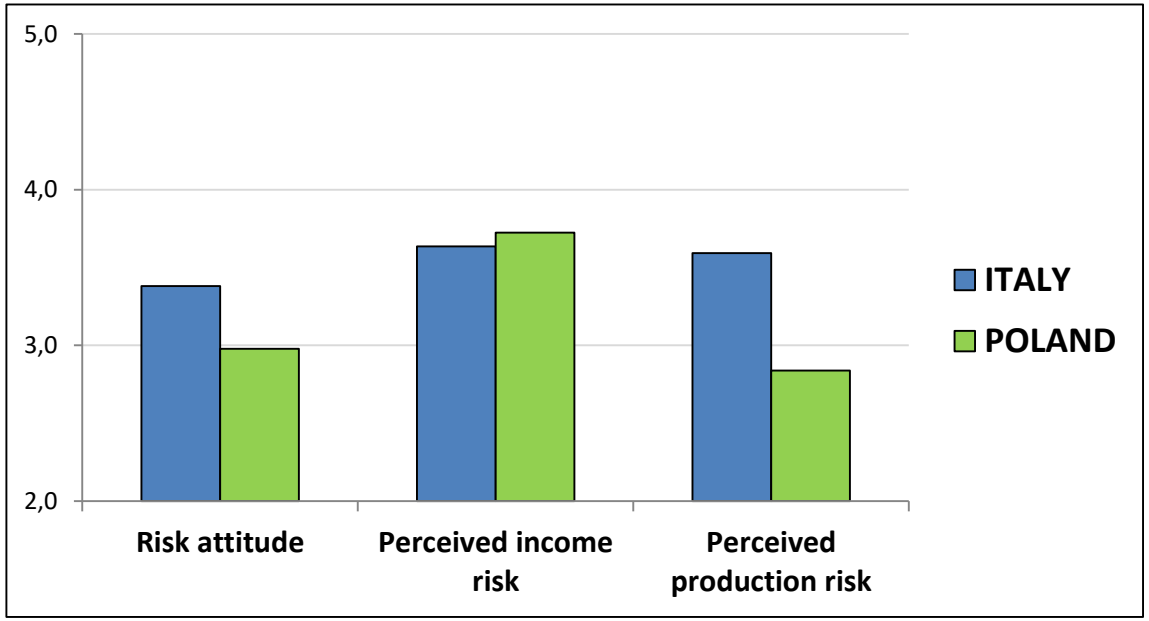
# MACROCATEGORIES OF FARM TYPES

| farm type | N.Obs. | % | | N.Obs. | % |
|---|---|---|---|---|---|
| **ITALY** | | | | | |
| CROPS | 24 | 22 | *Field crops* | 13 | 54 |
| | | | *Horticulture* | 11 | 46 |
| PERMANENT CROPS | 56 | 50 | *Viticulture* | 30 | 54 |
| | | | *Other permanent crops* | 26 | 46 |
| LIVESTOCK | 13 | 12 | *Cattle livestock (non-dairy)* | 3 | 23 |
| | | | *Dairy cattle* | 1 | 8 |
| | | | *Pigs* | 0 | 0 |
| | | | *Poultry* | 9 | 69 |
| | | | *Rabbitry* | 0 | 0 |
| MIXED | 18 | 16 | *Mixed cropping* | 2 | 11 |
| | | | *Mixed livestock* | 1 | 6 |
| | | | *Mixed crops-livestock* | 15 | 83 |
| **POLAND** | | | | | |
| SPECIALIZED (*crop*) | 22 | 31 | | | |
| MIXED | 48 | 69 | | | |

# PERCEIVED INCOME AND PRODUCTION RISK at farm level and SUBJECTIVE RISK ATTITUDE

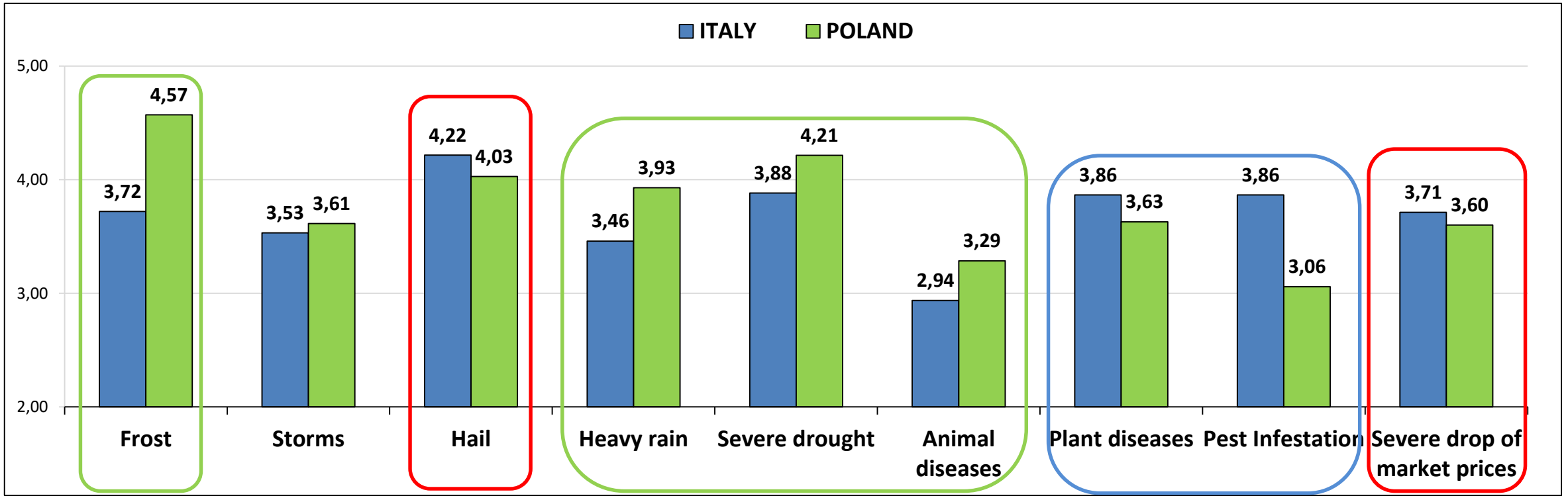
| | Risk attitude | | Perceived income risk | | Perceived production risk | |
|---|---|---|---|---|---|---|
| | Mean | S.D. | Mean | S.D. | Mean | S.D. |
| ITALY | 3.40 | 0.27 | 3.60 | 0.13 | 3.60 | 0.15 |
| POLAND | 3.00 | 0.50 | 3.70 | 0.17 | 2.80 | 0.50 |

*Note: 6 items for risk attitude, 3 items for perc. Income/prod. risk*



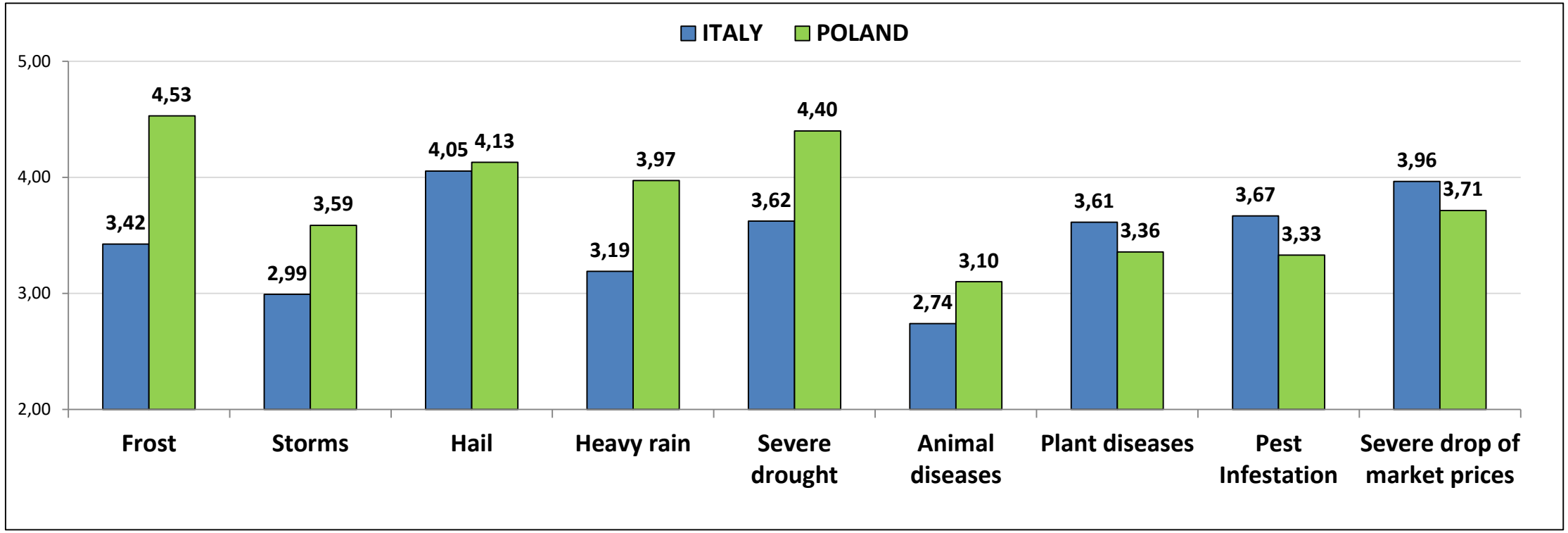

| ITALY | CROP | | PERMANENT | | LIVESTOCK | | MIXED | |
|---|---|---|---|---|---|---|---|---|
| | Mean | S.D. | Mean | S.D. | Mean | S.D. | Mean | S.D. |
| perceived income risk | **3.65** | 0.17 | 3.64 | 0.19 | 3.49 | 0.16 | **3.72** | 0.20 |
| perceived production risk | 3.49 | 0.10 | **3.64** | 0.16 | 3.36 | 0.19 | **3.76** | 0.17 |
| risk attitude | **3.55** | 0.30 | **3.43** | 0.32 | 2.88 | 0.43 | 3.36 | 0.23 |

# PERCEIVED RISK FREQUENCY at farm level



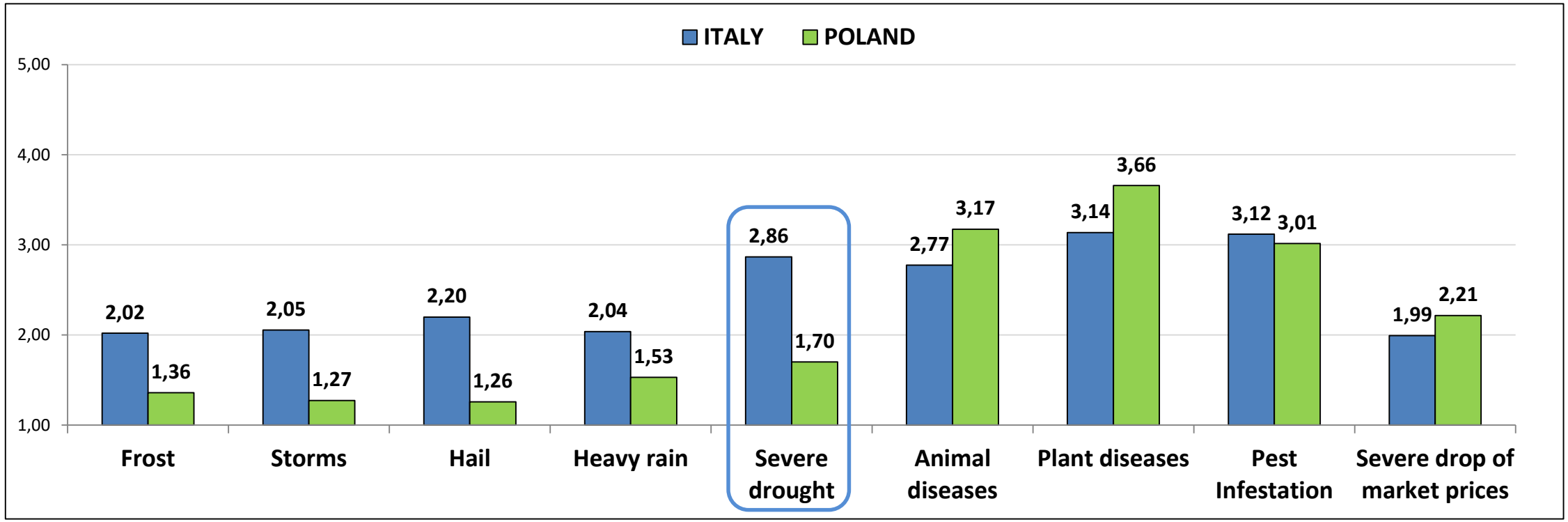

| | | Frost | Storms | Hail | Heavy rain | Severe drought | Animal diseases | Plant diseases | Pest Infestation | Severe drop of market prices |
|---|---|---|---|---|---|---|---|---|---|---|
| ITALY | Mean | 3.72 | 3.53 | **4.22** | 3.46 | **3.88** | 2.94 | **3.86** | **3.86** | 3.71 |
| | S.D. | 1.01 | 1.13 | 0.87 | 1.15 | 1.05 | 1.28 | 0.94 | 1.00 | 1.12 |
| POLAND | Mean | **4.57** | 3.61 | **4.03** | 3.93 | **4.21** | 3.29 | 3.63 | 3.06 | 3.60 |
| | S.D. | 0.50 | 0.98 | 0.87 | 0.95 | 0.68 | 1.25 | 1.11 | 1.02 | 1.13 |

# PERCEIVED RISK IMPACT at farm level




| | | Frost | Storms | Hail | Heavy rain | Severe drought | Animal diseases | Plant diseases | Pest Infestation | Severe drop of market prices |
|---|---|---|---|---|---|---|---|---|---|---|
| **ITALY** | Mean | 3.42 | 2.99 | **4.05** | 3.19 | 3.62 | 2.74 | 3.61 | **3.67** | **3.96** |
| | S.D. | 1.27 | 1.17 | 1.13 | 1.14 | 1.21 | 1.41 | 1.17 | 1.27 | 1.11 |
| **POLAND** | Mean | **4.53** | 3.59 | **4.13** | 3.97 | **4.40** | 3.10 | 3.36 | 3.33 | 3.71 |
| | S.D. | 0.50 | 1.00 | 0.87 | 0.76 | 0.52 | 1.41 | 1.27 | 1.25 | 1.36 |

# PERCEIVED RISK CONTROL at farm level

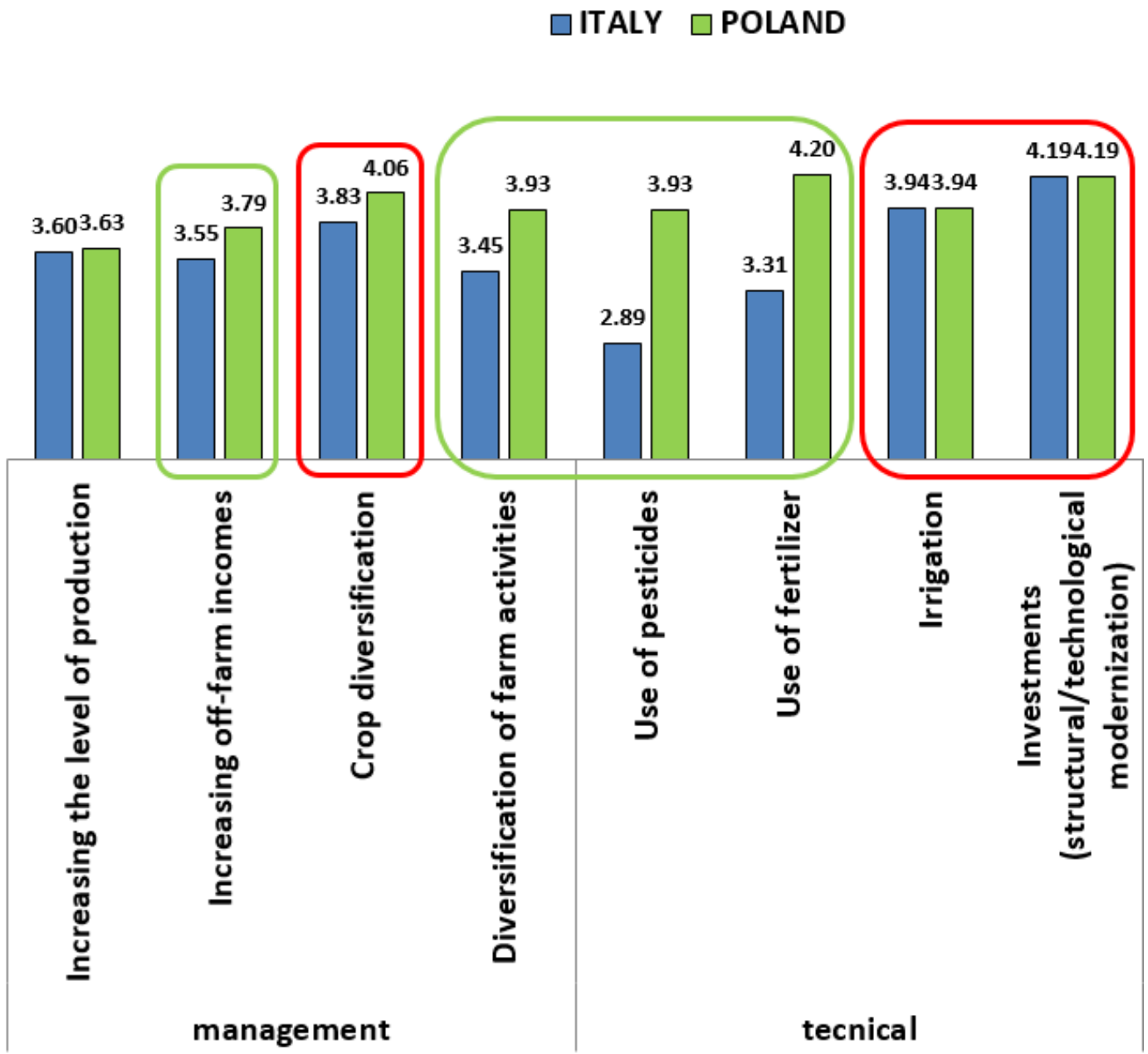



| | | Frost | Storms | Hail | Heavy rain | Severe drought | Animal diseases | Plant diseases | Pest Infestation | Severe drop of market prices |
|---|---|---|---|---|---|---|---|---|---|---|
| ITALY | Mean | 2.02 | 2.05 | 2.20 | 2.04 | **2.86** | 2.77 | **3.14** | **3.12** | 1.99 |
| | S.D. | 1.18 | 1.20 | 1.37 | 1.21 | 1.33 | 1.29 | 1.21 | 1.21 | 1.17 |
| POLAND | Mean | 1.36 | 1.27 | 1.26 | 1.53 | 1.70 | **3.17** | **3.66** | **3.01** | 2.21 |
| | S.D. | 0.78 | 0.59 | 0.53 | 0.81 | 0.91 | 1.08 | 0.78 | 1.06 | 1.20 |

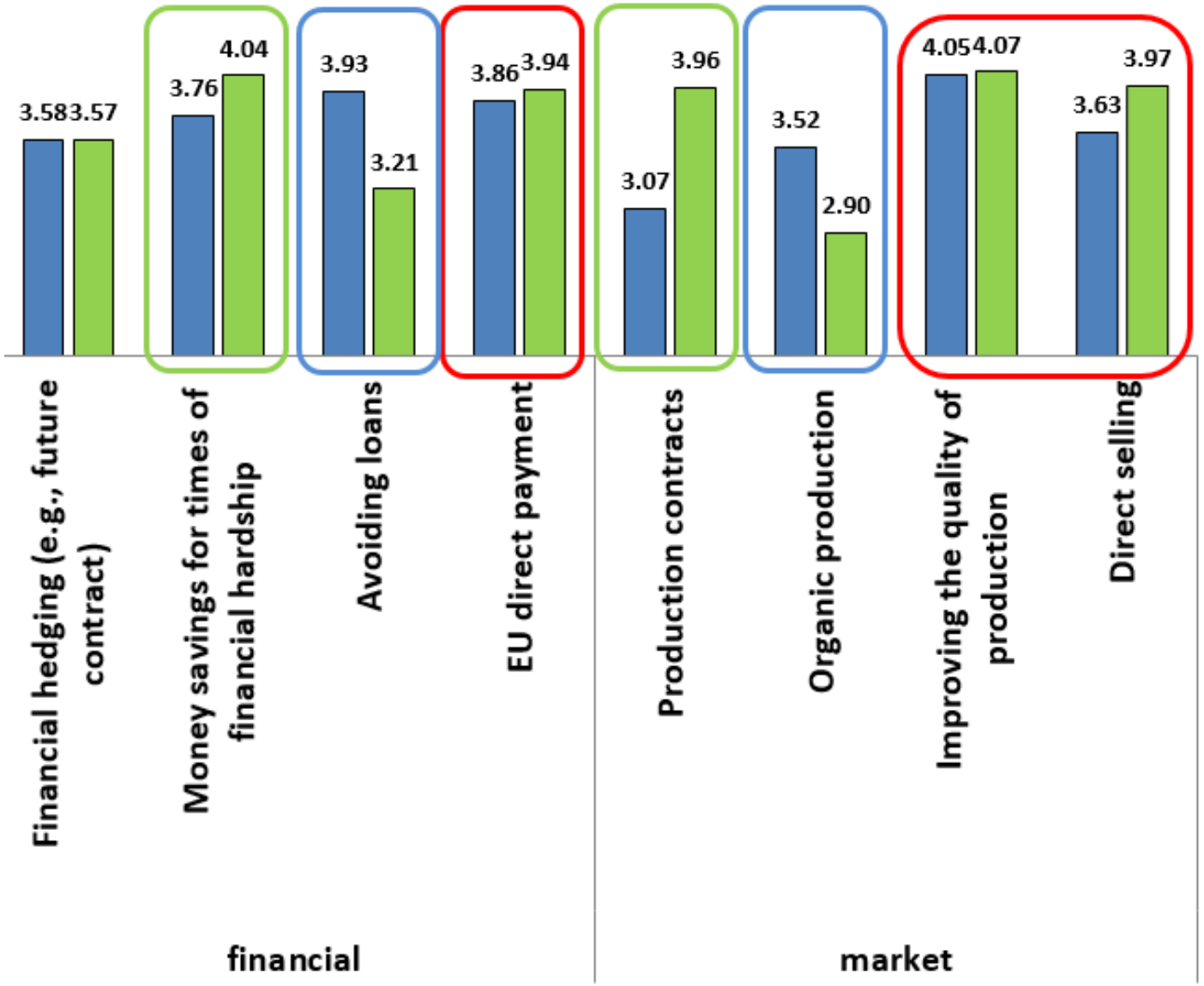
# PREFERRED SELF-COPING STRATEGIES

| | ITALY | | POLAND | |
|---|---|---|---|---|
| | Mean | S.D. | Mean | S.D. |
| Production contracts | 3.07 | 1.11 | 3.96 | 0.67 |
| Irrigation | **3.94** | 0.85 | 3.94 | 0.68 |
| Crop diversification | 3.83 | 0.97 | **4.06** | 0.70 |
| Diversification of farm activities | 3.45 | 1.14 | 3.93 | 0.69 |
| Use of pesticides | 2.89 | 1.11 | 3.93 | 0.86 |
| Use of fertilizer | 3.31 | 1.06 | **4.20** | 0.63 |
| Organic production | 3.52 | 1.20 | 2.90 | 0.97 |
| Improving the quality of production | **4.05** | 0.99 | **4.07** | 0.69 |
| Investments for structural and technological | **4.19** | 0.79 | **4.19** | 0.67 |
| Financial hedging (e.g., future contract) | 3.58 | 0.97 | 3.57 | 0.86 |
| Money savings for times of financial hardship | 3.76 | 0.95 | **4.04** | 0.79 |
| Increasing off-farm incomes | 3.55 | 0.96 | 3.79 | 0.95 |
| Avoiding loans | **3.93** | 1.05 | 3.21 | 1.05 |
| Increasing the level of production | 3.60 | 1.07 | 3.63 | 1.02 |
| Direct selling | 3.63 | 1.12 | 3.97 | 0.78 |
| EU direct payment | **3.86** | 1.00 | 3.94 | 0.81 |

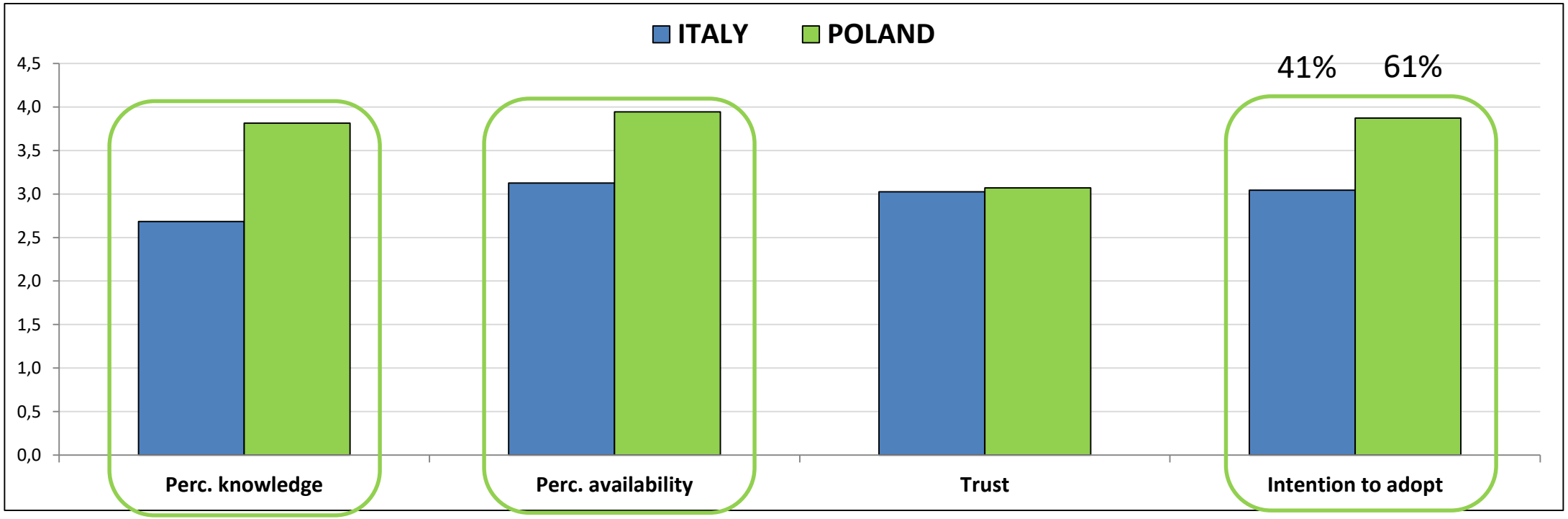
# PREFERRED SELF-COPING STRATEGIES



# PREFERRED SELF-COPING STRATEGIES



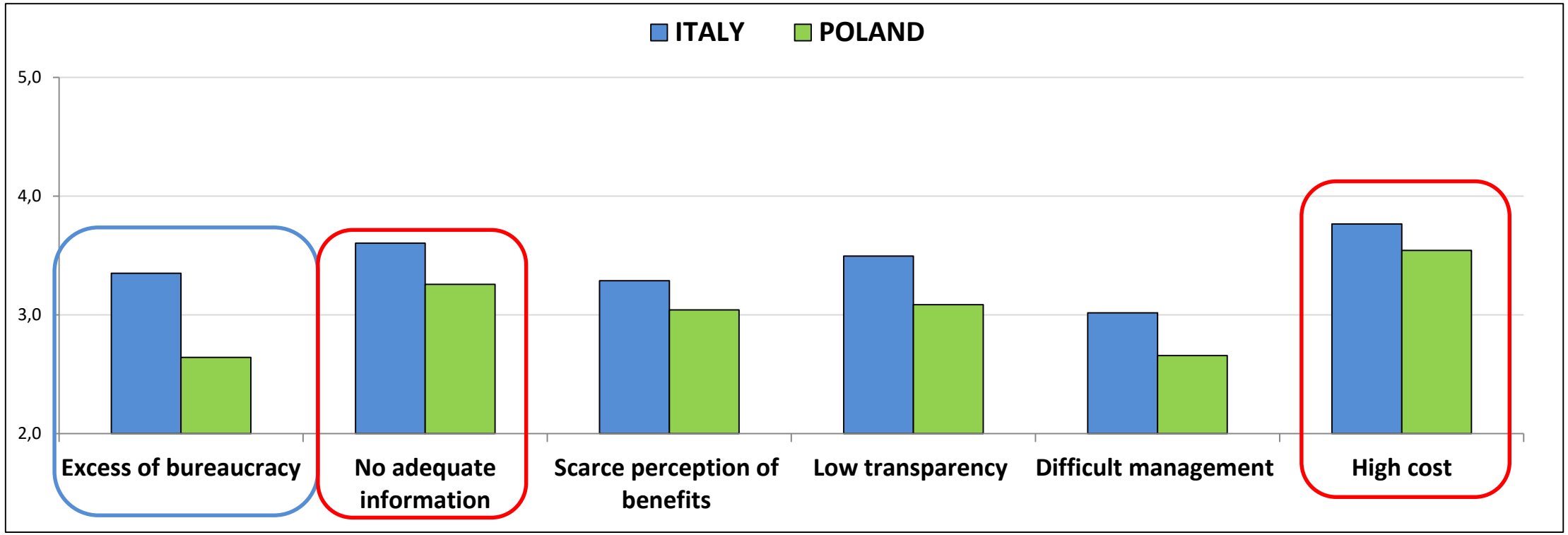
# PERCEIVED KNOWLEDGE and AVAILABILITY, TRUST TOWARDS THE INTERMEDIARIES and SUBJECTIVE INTENTION TO ADOPT INSURANCE IN THE NEAR FUTURE




*Note: 3 items for trust*

| | Perceived knowledge | | Perceived availability | | Trust | | Intention to adopt | |
|---|---|---|---|---|---|---|---|---|
| | Mean | S.D. | Mean | S.D. | Mean | S.D. | Mean | S.D. |
| ITALY | 2.68 | 1.21 | 3.13 | 1.02 | 3.02 | 0.17 | 3.05 | 1.18 |
| POLAND | 3.81 | 1.09 | 3.94 | 0.98 | 3.07 | 0.18 | 3.87 | 0.99 |

# PERCEIVED BARRIERS TO INSURANCE ADOPTION




| | | Excess of bureaucracy | No adequate information | Scarce perception of benefits | Low transparency | Difficult management | High cost |
|---|---|---|---|---|---|---|---|
| ITALY | Mean | 3.35 | 3.60 | 3.29 | 3.50 | 3.02 | 3.77 |
| | S.D. | 1.09 | 1.16 | 1.18 | 1.05 | 1.04 | .92 |
| POLAND | Mean | 2.64 | 3.26 | 3.04 | 3.09 | 2.66 | 3.54 |
| | S.D. | 1.27 | 1.06 | .84 | .86 | .78 | .93 |

# CONCLUSION

**Preliminary descriptive information from an on-going field survey among farmers aiming at explaining factors affecting insurance uptake.**

**Generally speaking…**

| ***FACTORS*** | ***ITALY*** | ***POLAND*** |
|---|---|---|
| *RISK FREQUENCY (AND IMPACT)* | higher for hail | frost |
| *RISK CONTROL* | high for drought | |
| *SELF-COPING STRATEGIES* | high for organic production | high use of technical input |
| *OTHERS* | high perception of barriers to insurance adoption (cost, lack of info, bureaucracy) | high knowledge and availability of insurance tool and intention to adopt insurance (61%) |
| *AGRICULTURAL INSURANCE* | voluntary measure (EU and state aid) | compulsory measure to receive EU direct payments |

# Thank you
# for your attention.

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# PERCEIVED RISK FREQUENCY AT FARM LEVEL (Italy)

| ITALY | CROP | | PERMANENT | | LIVESTOCK | | MIXED | |
|---|---|---|---|---|---|---|---|---|
| | Mean | S.D. | Mean | S.D. | Mean | S.D. | Mean | S.D. |
| Frost | 3.83 | .96 | 3.75 | .96 | 3.77 | 1.17 | 3.44 | 1.15 |
| Storms | 3.75 | 1.15 | 3.54 | 1.09 | **3.85** | .99 | 3.00 | 1.24 |
| Hail | **4.08** | 1.06 | **4.38** | .70 | **3.92** | 1.04 | **4.11** | .90 |
| Heavy rain | 3.79 | .98 | 3.34 | 1.18 | 3.54 | 1.05 | 3.33 | 1.33 |
| Severe drought | **4.04** | 1.00 | **3.88** | .99 | **3.85** | 1.21 | 3.72 | 1.23 |
| Animal diseases | .00 | .00 | .00 | .00 | 3.62 | 1.19 | 3.50 | .99 |
| Plant diseases | **3.96** | .86 | **3.95** | .86 | .00 | .00 | **4.00** | .91 |
| Pest Infestation | 3.92 | .88 | 3.84 | .97 | 3.46 | 1.33 | **4.17** | .92 |
| Severe drop of market prices | 3.92 | 1.10 | 3.59 | 1.14 | 3.69 | 1.11 | 3.83 | 1.15 |

# PERCEIVED RISK IMPACT AT FARM LEVEL (Italy)

| ITALY | CROP | | PERMANENT | | LIVESTOCK | | MIXED | |
|---|---|---|---|---|---|---|---|---|
| | Mean | S.D. | Mean | S.D. | Mean | S.D. | Mean | S.D. |
| Frost | 3.42 | 1.18 | **3.77** | 1.29 | 2.92 | 1.04 | 2.72 | 1.13 |
| Storms | 3.21 | 1.22 | 3.00 | 1.22 | 3.08 | 1.04 | 2.61 | 1.04 |
| Hail | **4.13** | .99 | **4.32** | 1.06 | 3.46 | 1.05 | **3.56** | 1.34 |
| Heavy rain | 3.46 | 1.18 | 3.21 | 1.11 | 3.08 | 1.32 | 2.83 | 1.04 |
| Severe drought | **3.96** | 1.12 | 3.59 | 1.17 | 3.46 | 1.45 | 3.39 | 1.29 |
| Animal diseases | .00 | .00 | .00 | .00 | **4.08** | 1.12 | 3.39 | 1.14 |
| Plant diseases | 3.92 | .93 | 3.63 | 1.20 | .00 | .00 | 3.61 | 1.09 |
| Pest Infestation | 3.67 | 1.31 | 3.63 | 1.24 | **3.54** | 1.51 | **3.89** | 1.18 |
| Severe drop of market prices | **4.13** | 1.15 | **3.93** | 1.09 | **3.92** | 1.26 | **3.89** | 1.08 |

# PERCEIVED RISK CONTROL AT FARM LEVEL (Italy)

| ITALY | CROP | | PERMANENT | | LIVESTOCK | | MIXED | |
|---|---|---|---|---|---|---|---|---|
| | Mean | S.D. | Mean | S.D. | Mean | S.D. | Mean | S.D. |
| Frost | 2.00 | 1.10 | 2.04 | 1.24 | 2.08 | 1.12 | 1.94 | 1.21 |
| Storms | 1.92 | 1.18 | 2.21 | 1.29 | 2.15 | 1.07 | 1.67 | 1.03 |
| Hail | 2.21 | 1.38 | 2.23 | 1.48 | 2.00 | 1.15 | 2.22 | 1.26 |
| Heavy rain | 1.92 | 1.28 | 2.05 | 1.18 | 2.00 | 1.22 | 2.17 | 1.29 |
| Severe drought | **2.79** | 1.35 | **3.11** | 1.23 | 2.23 | 1.30 | **2.67** | 1.53 |
| Animal diseases | .00 | .00 | .00 | .00 | **2.85** | 1.41 | **3.22** | 1.22 |
| Plant diseases | **3.29** | 1.23 | **3.18** | 1.18 | .00 | .00 | **3.17** | 1.25 |
| Pest Infestation | **3.58** | .88 | **3.11** | 1.19 | 2.31 | 1.18 | **3.11** | 1.45 |
| Severe drop of market prices | 2.08 | 1.25 | 2.00 | 1.16 | 1.54 | .88 | 2.17 | 1.29 |