Virtual Conference on Aging
Technologies for Active and Independent Living in Old Age

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Recovery 4.0
Ageing labour markets and digitalization of the economy
at the time of Covid 19

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Italian work force growth 2002-2019. By age classes (%)

Source: author’s elaboration on ISTAT data

Italian participation rate 2002-2019. By age classes (%)

Source: author’s elaboration on ISTAT data
between 2002 and 2019 the relative growth of the **Italian workforce** and its stable participation level were possible due to an increase in the demographic share of the older age classes, and by their wider participation in the labour market

between November 2019 and November 2020 **employed population 15-64**, dropped losing more than 750 thousand jobs

**inactive population** 15-64 grew by 525 thousands, more among men than women (+4.1% vs 33,%) and more in the age classes 25-34 (+9,8%) and 50-64 (+3,6%)

**unemployment** grew more among younger workers

already in 2018, the **Italian demographic dividend** (difference between the growth rate of the population of working age 15-64 and the overall population), which represent the contribution of demographics to economic growth, was estimated to be negative at least until 2051 (Barbiellini Amidei et alii, 2018)

assuming a **productivity level** as that of 2016, in the next 45 years the national GDP would decrease by 24,4% (-16,2% per capita); therefore productivity should increase by 0,34% per year to counterbalance this drop
Labour market demographics

Maintenance and raising of productivity levels of the economy and recovery after the current crisis

Digitalisation of economy

Increasing in the participation of underrepresented social groups

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## Routine tasks analysis

<table>
<thead>
<tr>
<th>Routine cognitive (RC)</th>
<th>Routine manual (RM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Importance of repeating the same tasks</td>
<td>✓ Pace determined by speed of equipment</td>
</tr>
<tr>
<td>✓ Importance of being exact or accurate</td>
<td>✓ Controlling machines and processes</td>
</tr>
<tr>
<td>✓ Structured v. Unstructured work (reverse)</td>
<td>✓ Spend time making repetitive motions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-routine cognitive: Analytical (NRCA)</th>
<th>Non-routine cognitive: Interpersonal (NRCI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Analyzing data/information</td>
<td>✓ Establishing and maintaining personal relationships</td>
</tr>
<tr>
<td>✓ Thinking creatively</td>
<td>✓ Guiding, directing and motivating subordinates</td>
</tr>
<tr>
<td>✓ Interpreting information for others</td>
<td>✓ Coaching/developing others</td>
</tr>
</tbody>
</table>

Source: Gualtieri et alii, 2018
Routine tasks analysis

RM and RC 2017, 45-54 and 55-64 share 2017 by occupations (RTI 0-100; % older workers on total employment)

- higher levels of routinization of manual tasks (RM) characterize plant and machinery operators and assemblers and craft and related trades workers
- RM indicator appears unexpectedly low in “intellectual” occupations, while it scores an intermediate level among services and sales workers and elementary occupations

- the indicator of the routinization of cognitive tasks (RC) scores a relatively high level in all occupations, with the exception of the elementary ones

Source: author’s elaboration on INAPP
Non Routine tasks analysis

NRCA and NRCI 2017, 45-54 and 55-64 share 2017 by occupations (RTI 0-100; % older workers on total employment)

RC indicator scores much higher in all age classes and it peaks among the oldest ones
NRC indicators increase their values from younger to older employed persons and RM indicator decreases in relation to age

Managerial, technical and scientific professions show the highest levels of “high” skills, which merge technical knowledge and social competencies
Commercial occupations in the service sector scored a much lower level of NRC indicators
Clerical occupations and craft and skilled workers show a higher level of cognitive non routine skills, in comparison to plant and machinery operators and elementary occupations.

Source: author’s elaboration on INAPP

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RM, RC, NRCA and NRCI 2017, employment demand 2020-2024 by occupations (RTI 0-100; % on total employment demand)

- Occupations on which almost 44% of employment demand concentrates, (professionals and technicians and associate professionals) score the highest values of NRCA and NRCI, and a high RC level.

Source: author’s elaboration on INAPP and Unioncamere 2020
Italian demographics and consequences of the pandemic on the labour market

Potential penetration of digital technologies in the economic sectors

Workers’ employability during the recovery

Conclusions
Despite the trust that Italian private employers show towards older workers as guarantee of maintenance of know-how and organizational resilience their digital employability appear critical.

According to OECD, older people 55-65 with low cognitive and digital skills were 32% in 2015, in comparison to an average of 17.1% among OECD members (OECD, 2019).

Workers needing medium training (up to 1 year) to transition to occupations at low or medium risk of automation were 13.8%, while those reporting high training needs (up to 3 years) were 4.2%, in comparison to an OECD average of 10.% and 2.8% respectively.
Digital employability

**demographic and digital transition**
- Hamper skills shift needed in post-crisis recovery
- Younger/older turnover slower in sectors requiring long time training and job experience
- Employers reluctant to invest in the improvement of older workers skills

**Italian labour market structure**
- Relevant mismatch between labour offer and demand
- Difficulties in recruiting increases as the cognitive content of routine and non routine tasks increases
- High-skilled workers difficult to find due to few candidates
- Medium-level technical and experts show inadequate preparation

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Effects of Covid-19

Redefinition of risk parameters
Impact on services
Remote working solutions speed up
Reconsideration of demographics
Critical role played by information
Remote workability and RTI

RM, RC, NRCA and NRCI 2017, remote workability index 2019, by occupations (RTI 0-100)

Source: author’s elaboration on INAPP
According to Eurofound, Italy had in the first half of 2020 the higher share of 50+, after Finland, who started to work from home as a result of the situation caused by the Pandemic.

Estimations that merge automation potential and transmission risk indexes place Italy in eighth position after Japan, Spain, The Netherlands, Korea, Turkey, Greece and Slovak Republic. Italian women workers appear more at risk than the male ones, while 50-65 are more at risk among men than among women.

Italy could be among the countries in which employers could likely react to the Pandemic boosting automation, in order to face its productivity consequences and to safeguard the production process against contagion risks (Chernoff, Warman, 2020).

The relevant share of repetitive and standardized cognitive tasks could expose almost all Italian occupations to an automation risk, both “on site”, or by means of a “digital offshoring” or “tele migration” towards nations with a lower cost of human capital or by means of the implementation of artificial intelligence solutions (Baldwin, Forslid, 2020).

Difficulties in skills recruiting for occupations with a high NRC could also push employers to seek alternative solutions, which include offshoring options, in the absence of immigration policies able to manage the problem.
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**Structural problems**

- Incomplete transition to a knowledge based economy
- Gender gap
- Demographics
- Generational gap

Low economic growth
National Recovery Strategy

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- Digitalisation of the Public sector
- Digitalisation of enterprises
- Tourism 4.0

Gender gap, younger people, Southern Italy
(Provisional) conclusions

Correct and exhaustive identification of structural problems exacerbated by the pandemic

Complex medium-term strategy especially as concerns Education, work force training, PES and Health

Trade-off between the medium term strategy and the speed that digital technology can further bring to the transformation of economy

Apparently public and private actors still lack a shared perception of problems and a clear vision of future preferable scenarios

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