Who will suffer most from the economic downturn?

T. Manfredi & V. Vandenberghe

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Abstract

Who will suffer most from the current economic downturn? This memo uses the OECD Labour force annual statistics database to estimate the sensitivity of labour market outcomes (unemployment, employment , labour force participation) for various age groups: youth (12-24), senior (55-64) and adults (25-54)**.** Assuming past observations tell us something about future developments, we conclude unambiguously that youth is likely to be the most affected group. A one percentage point (negative) deviation from the GDP's long-term growth rate could lead to a .65 percentage point increase of the adult unemployment rate. The increase for senior workers would be slightly lower at .45. But the youth unemployment rate – which is already more than double the adult rate – would rise by more than 1.35 percentage points.

1. Introduction

As stated in a recent OECD action plan on the financial and economic crisis (OECD, 2008), the world is facing the most severe financial crisis since the Great Depression. And the crisis is now spreading to the real economy. The spill over from the financial sector to the real economy will inevitably translate into more unemployment. But which groups are most likely to be affected by the economic downturn? This memo aims at bringing some answer to this question, particularly concerning the distribution of the overall negative shock across age groups. It draws on evidence accumulated with the Jobs for youth project where many indicators where developed to assess the situation of youth vis-à-vis other age groups.

The memo addresses three issues.

First and most importantly, the difference across age groups. Less GDP growth (or possibly negative) growth means more unemployment. But are youth (15-24) likely to be more affected than adults or senior workers? There are a number of reasons why one expects the answer to be positive. The first reaction of firms to a recession is to cease hiring before commencing on the more expensive procedure of redundancies. It is evident that young people comprise a disproportionate segment of job-seekers and should thus more heavily affected by a freeze in new recruitments. For employers, the cost to firms of firing young people is lower than for older workers. Being less skilled (then the long-term insiders), they embody lower levels of investment by firms in training and consequently involve a smaller loss to firms making them redundant. Moreover, young people are less likely to be subject to employment protection legislation (EPL) or age (anti)discrimination rules. Almost invariably, such legislation requires a qualifying period before it can be invoked and typically compensation for redundancy increases with tenure/seniority. Thus, also for these reasons, the more recently taken on employees will be cheaper to fire. Obviously, this will disproportionately affect young people.

The evidence presented here after largely accords with these predictions. A one percentage point of GDP growth (negative) deviation will *ceteris paribus* lead to .65 percentage point increase of the adult unemployment rate. The increase for senior workers will slightly lower at .45. But the youth unemployment rate – which is already more than double the adult rate -- will rise by more than 1.35 percentage points.

Second, the memo looks at evidence of changes over time. Is the sensitivity of the youth unemployment rate to GDP shocks different in the 2000s than, say, in the 1990s or 1970s? The answer seems to be no. Using the OECD Labour force annual statistics database that collects information since the early 1960s, we find no evidence of statistically significant changes. In other words, the youth unemployment rate has always been more sensitive to GDP shocks than the adult or senior rate of unemployment.

Third, we also test for non-linearity. This means that we try to see if the increment in terms of unemployment is a rising function of the intensity of the GDP growth rate contraction. This question appears particularly relevant when confronted – like nowadays-- with severe economic downturns that are synonymous with larger GDP (negative) shocks. But the evidence we have gathered here is not supportive of these non-linear adjustments.

The rest of the paper is structured as follows. Section 2 presents the data used and some key stylized fact. Section 3 presents the econometric analysis. Section 3 concludes

2. Data

The data on labour force participation, employment and unemployment used here are from the OECD Labour force statistics database. A crucial input of the analysis is the GDP data. Our annual GDP time series come from the OECD data basis. We are particularly interested in the consequences of GDP shocks, where the term "shocks" refer to deviations from the long-term trend. To capture these shocks we resort to de-trending techniques. Our GDP data are de-trended with a Hodrick-Prescott (1997) filter.

This leads to a set of annual data that cover the period 1966 -2007 and document the situation of 29 countries (Table 1). Note that we are dealing with a very unbalanced panel, in the sense that the number of countries increase with time, reflecting the gradual expansion of the OECD.

The country averages for the labour market outcomes (unemployment, employment and participation rates) are presented in Table 2.

Table 1 – OECD Labour force statistics database. Number of countries and year spells

Country	First observation	Last observation	Number of year spells
AUS	1966	2007	42
AUT	1996	2007	12
BEL	1995	2007	13
CAN	1976	2007	32
CHE	1991	2007	17
CZE	1996	2007	12
DEU	1991	2007	17
DNK	1990	2007	18
ESP	1995	2007	13
FIN	1990	2007	18
FRA	1978	2007	30
GBR	1984	2007	24
GRC	2000	2007	8
HUN	2000	2007	8
IRL	2000	2007	8
ISL	1997	2007	11
ITA	1981	2007	27
JPN	1994	2007	14
KOR	1980	2007	28
LUX	1995	2007	13
MEX	2003	2007	5
NLD	1988	2007	20
NOR	1978	2007	30
NZL	1988	2007	20
POL	1995	2007	13
PRT	1995	2007	13
SVK	1997	2007	11
SWE	1993	2007	15
TUR	1998	2007	10

Source: OECD Labour force statistics database 2008

Table 2 – OECD Labour force statistics database. Labour market outcomes

	1524			2554			5564		
Country	**Unempl.**	**Empl.**	**Part.**	**Unempl.**	**Empl.**	**Part.**	**Unempl.**	**Empl.**	**Part.**
AUS	11.40	61.97	70.03	4.47	72.97	76.46	5.36	43.87	46.34
AUT	6.73	53.97	57.96	3.68	82.14	85.30	4.16	30.36	31.75
BEL	19.01	28.99	35.89	7.67	73.59	79.69	4.18	25.00	26.15
CAN	14.22	57.00	66.44	7.33	76.22	82.26	6.63	48.00	51.39
CHE	6.07	63.41	67.55	3.11	84.76	87.47	2.80	64.31	66.19
CZE	13.60	37.68	43.42	5.62	83.50	88.48	4.21	38.88	40.65
DEU	7.31	53.55	57.59	5.71	74.91	79.51	8.16	40.20	44.38
DNK	9.91	64.43	71.57	5.89	83.47	88.74	5.57	53.66	56.87
ESP	26.91	40.20	54.54	11.03	62.25	70.15	7.30	40.50	43.56
FIN	12.77	47.94	54.64	5.21	81.77	86.33	6.50	48.11	51.22
FRA	17.23	34.36	40.83	6.46	76.71	82.16	5.67	41.84	44.22
GBR	13.76	61.80	71.70	6.28	78.11	83.33	6.33	50.13	53.47
GRC	26.32	27.69	37.62	7.26	69.48	74.99	2.82	41.20	42.43
HUN	16.34	29.23	35.00	7.06	72.67	78.21	4.30	23.55	24.62
IRL	15.13	45.47	53.53	9.04	64.20	70.48	6.40	44.37	47.44
ISL	6.20	61.54	66.73	1.99	88.84	91.02	0.00	84.08	86.14
ITA	25.93	30.19	40.88	5.72	66.00	70.14	2.69	28.84	29.65
JPN	4.74	46.04	48.24	2.13	73.07	78.72	3.36	62.50	64.69
KOR	9.19	32.39	35.66	2.96	71.98	74.17	1.65	60.54	61.57
LUX	5.94	39.31	42.54	2.04	74.22	76.04	0.00	25.78	25.96
MEX	6.51	47.68	51.01	2.74	66.87	68.75	1.57	52.97	53.82
NLD	10.27	53.77	59.76	4.98	69.85	73.51	3.81	35.65	37.07
NOR	8.86	53.69	58.97	2.55	81.56	83.73	1.36	64.71	65.61
NZL	12.35	58.08	66.31	4.77	78.34	82.27	3.37	54.31	56.33
POL	32.55	25.23	37.33	13.00	72.18	82.97	8.12	31.16	33.89
PRT	13.62	49.05	56.87	4.84	76.19	80.13	2.73	48.97	50.43
SVK	29.25	30.35	43.01	12.74	76.93	88.19	10.18	24.90	27.86
SWE	9.64	56.63	62.25	3.22	83.86	86.71	3.35	65.38	67.70
TUR	16.71	38.71	46.39	6.40	58.06	61.99	2.84	38.21	39.31
USA	11.87	56.18	63.80	4.52	74.67	78.23	3.57	56.47	58.55
Average	14.01	46.22	53.27	5.68	74.98	79.67	4.30	45.61	47.64

Source: OECD Labour force statistics database 2008

3. Econometric models

The analysis consists of estimation simple equations using OLS. The first equation of interest is the one that captures the differences across age groups. We rely on *YOUTH* and *SENIOR* dummies (the adults aged 2554 being the reference group) to capture the age-related asymmetries.

$$Y_{i,t} = \alpha 0 + \alpha 1\ YOUTH + \alpha 2\ SENIOR + \beta 0\ GDP\_HP_{i,t} +$$

$$\beta 1\ YOUTH^{*}\ GDP\_HP_{i,t} + \beta 2\ SENIOR^{*}\ GDP\_HP_{i,t} + \mu_{i,} + \varepsilon_{i,t} \qquad [1.]$$

where

- Y_t is the labour market outcome considered;

- $\beta 0$ reflects the sensitivity of the adult rate to one percentage point of GDP deviation (GDP_HP for Hodrick-Prescott de-trended GDP growth) ;

- while $\beta 1$ and $\beta 1$ captures the difference in sensitivity characterising youth and senior workers;

- finally μ_i is a country *i* fixed effect capturing all the differences across countries in terms of rate level that cannot be ascribed to GDP level or GDP changes. The very unbalanced nature of our panel (see Table 1) reinforces the case for including this term in all the estimations.

Results are reported in Table 3.a (unemployment), 3.b (employment) and 3.b (participation). It appears in Table 3.a that a one percentage point of GDP growth (negative) deviation *ceteris paribus* leads to .65 percentage point increase of the adult unemployment rate. (A bit) urprisingly, the increase for senior workers is even lower at .45. The main result however is that the youth unemployment rate rises by more than 1.35 percentage points. This means that their sensitivity to GDP shocks is more than double that of older workers.

Table 3.b. also suggests that the youth employment rate (-1.16) is more affected than the one of adult workers (-0.63) or senior workers (-.39), although the difference between youth and adult workers is only statistically significant at the level of 8%.

Table 3 – Sensitivity of labour market outcome to GDP shocks. Comparison of Youth, Senior and Adult (ref.) workers.

Table 3.a – Unemployment rate

Effect of 1 percentage point (negative) deviation from long-run trend on the unemployment rate

		Estimate	p-value
ageb	0_youth	1.356	0.0000
ageb	1_senior	0.453	0.0020
ageb	2_adult	0.655	ref. group
Rsquare		0.72	
N		1638	

Table 3.b – Employment rate

Effect of 1 percentage point (negative) deviation from GDP long-run trend on the employment rate

		Estimate	p-value
ageb	0_youth	-1.165	0.0720
ageb	1_senior	-0.390	0.2830
ageb	2_adult	-0.632	ref. group
Rsquare		0.82	
N		1638	

Table 3.c – Labour force participation rate

Effect of 1 percentage point (negative) deviation from long-run trend on the participation rate

		Estimate	p-value
ageb	0_youth	-0.496	0.4436
ageb	1_senior	-0.140	0.9288
ageb	2_adult	-0.093	ref. group
Rsquare		0.79	
N		1638	

The second equation is estimated separately for each age group *k*. It aims at capturing structural changes over time as to how rates respond to GDP shocks. We rely this time of on decade dummies, using the 2000s as a reference

$$Y_{i,t,k} = \alpha 0 + \alpha 1\, D60 + \alpha 2\, D70 + \alpha 3\, D80 + \alpha 4\, D90 + \beta 0\, GDP\_HP_{i,t} +$$

$$\beta 1\, D60 * GDP\_HP_{i,t} + \beta 2\, D70 * GDP\_HP_{i,t} + \beta 3\, D80 * GDP\_HP_{i,t} + \beta 4\, D90 * GDP\_HP_{i,t}$$

$$+ \mu_{i,k} + \varepsilon_{i,t,k} \qquad [2.]$$

where *k*=1524, 2554,5564

Results (only for youth and the unemployment rate) are reported in Table 4.a. They suggest no clear overall trend. However, a closer look shows that the sensitivity of the youth unemployment in the 2000s is lower that of the 1980s but not significantly different that during the 1970s or before.

These results need to be considered with some caution due to the unbalanced nature of the panel (Table 1). The change of decade is indeed largely correlated with the expansion of the OECD, and the increase of the number of countries driving the estimates. That is why we report in Table 4.b the results for a more balanced panel which includes only data since the beginning of the 1980s (with the implication that we lose the possibility to compare the 2000s with the 1970s and 1960s). The coefficients are remarkably similar to those of Table 4.a. They confirm that the 2000s probably represent a low point in the (recent) history of the sensitivity of youth unemployment to GDP shocks.

Table 4 – Sensitivity of labour market outcome to GDP shocks. How decades compare

Table 4 a. Youth unemployment rate.

Effect of 1 percentage point (negative) deviation from long-run trend on the youth unemployment rate

	Estimate	p-value
gdpHP*dec 1_<1970	-0.55	0.5902
gdpHP*dec 2_1970	1.36	0.7289
gdpHP*dec 3_1980	2.09	0.0244
gdpHP*dec 4_1990	1.52	0.0913
gdpHP*dec 5_>1990	1.01	ref. decade

Table 4 b. Youth unemployment rate. Year 1980 onwards only.

Effect of 1 percentage point (negative) deviation from long-run trend on the youth unemployment rate

	Estimate	p-value
gdpHP*dec 3_1980	2.08	0.0021
gdpHP*dec 4_1990	1.51	0.0156
gdpHP*dec 5_>1990	1.00	ref. decade

The third equation is also estimated separately for each age group *k*. It aims at detecting a non-linear relationship between the labour market outcome and the GDP deviation, an issue that may be particularly relevant when trying to assess the consequence of large GDP shocks.

$$Y_{i,t,k} = \alpha + \beta\, GDP\_HP_{i,t} + \gamma\, GDP\_HP^2_{i,t} + \mu_{i,k} + \varepsilon_{i,t,k} \qquad [3.]$$

where k=1524, 2554,5564

Results are reported (for youth and the unemployment rate only) in Table 5.a. They basically suggest that the effect of GDP on the youth unemployment rate is linear.

Table 5 – Sensitivity of labour market outcome to GDP shocks. Non linearities

Table 5.a. Youth unemployment rate.

Effect of 1 percentage point (negative) deviation from long-run trend on the youth unemployment rate

	Estimate	p-value
gdpHP	-1.37	0.0000
gdpHP*gdpHP	-0.08	0.2693

References

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