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Social Protection & Jobs

# Identifying High Performing Firms in Turkey and Linking Them to Good Jobs

Aysenur Acar and Ximena V. Del Carpio

10 January 2019

Central Bank of the Republic of Turkey

Ankara, Turkey

# Motivation

- Understanding which firms are most likely to create more jobs
  - Definition of Gazelles (High Performance Firms – HPFs) :
    - ✓ whether a gazelle is one that grows or achieves a high level of performance;
    - ✓ whether changes need to be sustained over a period of time;
    - ✓ whether thresholds are absolute or relative;
    - ✓ whether the outcome of interest is employment, growth or productivity.
  - Systematic firm characteristics associated with the different definitions
    - ✓ SMEs have been seen as ‘the engines of job creation’
  - Do HPFs create good jobs?

The aims are:

to identify high performing firms using different definitions

&

to link those firms to good jobs

# Literature

- Birch, 1979- Small enterprises, popularizing the term “gazelles” for fast growing firms (compared to “mice”, the small firms that did not grow, or “elephants”, large firms that do not grow (e.g. Birch and Medoff, 1994))
- Storey, 1994; Haltiwanger et al., 2010- High growth firms (HGFs) account for a large share of job creation
- Davidsson, 1998 and Delmar, 2003- Fast growing firms focusing on measurement:
  - choice of growth indicator (e.g. employment)
  - whether growth is measured in relative terms,
  - time
  - process of growth (achieved organically or through acquisitions)
- Daunfeldt, Elert and Johansson (2013)- some different aspects of how HGFs are defined, looking at both absolute and relative measures

# Data

1. Panel census data from Turkey 2007-2016, namely Entrepreneurship Information System (EIS)
  - Drawback: There is no information on which firms may have benefitted from government programs that may influence high growth firms
2. HPFs are identified based on the performance of two outputs: employment and value added  
*Value Added*  $_t = (Labor\ costs_t + Operating\ profits_t + Depreciation_t) / Sectoral\ deflations_t$
3. Minimum size of 10 (avoids selecting HPFs with only 1-2 additional workers)
  - country comparisons
  - the hiring of a single worker represents a significant rate of growth for the smallest firms, might skew results towards identifying fast-growing firms to the smallest ones.
4. 'age' is based on when firms began operations, but it should be noted that they only enter the sample when they pass the 10 employee threshold;
  - we will have firms whose birth and initial performance is not included. We have also chosen to keep firms in the sample once they have passed the minimum employment threshold, even if they subsequently fall below it to avoid biasing the sample to those with better performance.
5. Exit? Officially closed down?
  - There are establishments that do not report and then report again. We do not count those as exits; exit is reserved for establishments that do not reappear in the dataset.
6. High performance episodes are calculated over a minimum of 4 years (3 periods of growth)

# Methodology

Selecting on different dimensions for Employment or Value Added outputs include:

<b>Age:</b>	<b>Persistence:</b>	<b>Performance:</b>	<b>Selection:</b>	<b>Period selecting:</b>
No restrictions ( <i>tt3</i> )	Required positive performance every year ( <i>s=sustained</i> )	Growth rate ( <i>g=growth</i> )	Relative –top 5% ( <i>r=relative</i> )	- Pooling years
Young ( <i>15 or 05</i> )	No restrictions ( <i>j=jump</i> )	Increased level outcome ( <i>c=change</i> )	Absolute -i.e. 20% growth ( <i>a=absolute</i> )	- Year by year – offsets business cycle effects ( <i>y</i> ) (always 4 years)

# Methodology-Definitions

Defining High Performing Firms						
Number	Name	Performance	Periods used to calculate relative threshold	Age	Persistence	Selection
HPF1	tt3jcry	change	year-by-year	t-t3	jump	relative
HPF2	tt3jcr	change	pool each firms's best episode	t-t3	jump	relative
HPF3	tt3scry	change	year-by-year	t-t3	sustained	relative
HPF4	tt3scr	change	pool all episodes	t-t3	sustained	relative
HPF5	15jcr	change	one episode per young firm	1-5	jump	relative
HPF6	15scr	change	one episode per young firm	1-5	sustained	relative
HPF7	05jcr	change	one episode per young firm	0-5 *	jump	relative
HPF8	tt3jgry	growth	year-by-year	t-t3	jump	relative
HPF9	tt3jgr	growth	pool each firms's best episode	t-t3	jump	relative
HPF10	tt3sgry	growth	year-by-year	t-t3	sustained	relative
HPF11	tt3sgr	growth	pool all episodes	t-t3	sustained	relative
HPF12	tt3Sgry	growth	year-by-year	t-t3	SUSTAINED **	relative
HPF13	15jgr	growth	one episode per young firm	1-5	jump	relative
HPF14	15sgr	growth	one episode per young firm	1-5	sustained	relative
HPF15	tt3jga	growth		t-t3	jump	absolute
HPF16	tt3sga	growth		t-t3	sustained	absolute
HPF17	tt3sgA	growth		t-t3	sustained	ABSOLUTE #
HPF18	tt3cgry	Birch ##	year-by-year	t-t1	jump	relative

\* Includes entry; comparison is made at level of employment (or value added) at age 5

\*\* Rather than calculate threshold and keep those that sustained non-negative growth; only calculate the threshold on those that have sustained growth episodes. This reduces the share of firms, so the cutoff was taken at 10% instead of the usual 5%.

# Meets 20% growth 3 years consecutively

## The product of change & growth

# Main Results

## 1. V-HPFs vs L-HPFs:

- outcomes on L-HPFs or V-HPFs have similar patterns
- V-HPFs have good jobs outcomes

## 2. None of the HPFs have a combination of all good outcomes

## 3. Overall: “*change-relative*” have better outcomes; especially “young” –however, the number of selected young firms is relatively small

## 4. Definitions most found in literature:

- HPF15-*OECD* –absolute growth equivalent to 20% in 3 years: Number of firms is high; therefore overall net job creation is high but net job creation per firm is lowest
- HPF18-*Birch* –growth\*change relative: Has a relative good performance on net job creation

# Main Results

HPF			EMPLOYMENT			VALUE ADDED		
			N. Firms	Net Job Creation	Net Job Creation per episode	N. Firms	Net Job Creation	Net Job Creation per episode
HPF1	tt3jcry	change	14,937	2,820,633	41.5	13,291	2,471,948	35.4
HPF2	tt3jcr	best episode	9,570	2,514,009	74.6	9,337	2,256,095	50.8
HPF3	tt3scry	sustain	11,564	2,514,562	48.9	9,461	2,031,844	41.3
HPF4	tt3scr	sustain pooled	11,374	2,494,644	49.4	9,495	2,040,993	41.1
HPF5	15jcr	young	3,226	1,296,961	84.0	3,058	1,141,190	74.7
HPF6	15cr	young sustain	3,325	1,102,805	71.6	2,439	890,899	63.9
HPF7	05jcr	entry, age5	5,555	1,750,190	40.9	5,547	1,627,980	
HPF8	tt3jgry	growth	22,343	1,866,122	22.2	24,343	1,383,597	13.5
HPF9	tt3jgr	best episode	9,714	1,190,326	37.1	9,419	692,483	18.5
HPF10	tt3sgry	sustained	16,992	1,585,748	25.4	15,672	1,112,842	17.3
HPF11	tt3sgr	sustained pooled	16,843	1,562,642	25.4	15,646	1,113,729	17.3
HPF12	tt3Sgry	only sustain	6,730	951,865	39.3	5,860	554,147	23.3
HPF13	15jgr	young	3,197	521,280	36.4	3,058	302,656	21.9
HPF14	15sgr	young sustain	4,453	634,749	37.9	4,111	381,899	22.1
HPF15	tt3jga	absolute	48,819	2,769,648	14.3	81,105	3,082,266	8.3
HPF16	tt3sga	sustained	36,830	2,411,094	17.0	49,587	2,524,471	11.0
HPF17	tt3sgA	consecutive	8,897	992,853	28.7	16,016	1,159,730	16.0
HPF18	tt1cgry	birch	16,670	2,827,198	38.1	16,255	2,529,511	30.5



# Overlaps across different employment L-HPFs

	HPF	HPFj		N	CHANGE							GROWTH							OECD			BIRCH
					tt3jcry HPF1	tt3jcr HPF2	tt3scry HPF3	tt3scr HPF4	15jcr HPF5	15cr HPF6	05jcr HPF7	tt3jgry HPF8	tt3jgr HPF9	tt3sgry HPF10	tt3sgr HPF11	tt3Sgry HPF12	15jgr HPF13	15sgr HPF14	tt3jga HPF15	tt3sga HPF16	tt3sgA HPF17	tt1cgr HPF18
CHANGE	HPF1	tt3jcry	change	14937		64	77	74	21	22	28	64	43	51	50	32	14	19	84	67	27	91
	HPF2	tt3jcr	best episode	9570	100		79	79	29	28	38	66	48	52	52	36	17	22	85	68	30	98
	HPF3	tt3scry	sustain	11564	100	65		95	23	29	28	66	44	65	64	41	16	21	85	85	35	93
	HPF4	tt3scr	sustain pooled	11374	97	66	96		23	29	28	65	44	64	64	41	16	21	85	84	35	92
	HPF5	15jcr	young	3226	99	87	83	83		72	77	68	51	57	56	40	51	51	86	72	30	97
	HPF6	15scr	young sustain	3325	100	81	100	100	70		59	72	53	72	71	50	43	56	90	89	33	98
	HPF7	05jcr	entry_age5	5555	74	65	58	58	45	35		35	24	28	28	18	19	21	52	42	16	66
GROWTH	HPF8	tt3jgry	growth	22343	43	28	34	33	10	11	9		43	76	72	30	14	20	100	78	31	56
	HPF9	tt3jgr	best episode	9714	66	47	53	52	17	18	14	100		78	78	69	28	39	100	79	40	88
	HPF10	tt3sgry	sustained	16992	44	29	44	43	11	14	9	100	45		94	40	16	22	100	100	41	59
	HPF11	tt3sgr	sustained pooled	16843	45	30	44	43	11	14	9	95	45	95		40	16	22	100	100	41	59
	HPF12	tt3Sgry	only sustain	6730	71	51	70	69	19	25	15	100	100	100	100		32	43	100	100	53	94
	HPF13	15jgr	young	3197	68	50	58	58	52	45	34	98	86	84	84	68		91	99	85	41	86
	HPF14	15sgr	young sustain	4453	64	47	55	54	37	42	26	100	85	84	84	65	65		100	85	35	86
OECD	HPF15	tt3jga	absolute	48819	26	17	20	20	6	6	6	46	20	35	35	14	6	9		75	18	31
	HPF16	tt3sga	sustained	36830	27	18	27	26	6	8	6	47	21	46	46	18	7	10	100		24	33
	HPF17	tt3sgA	consecutive	8897	46	32	45	45	11	12	10	78	44	78	78	40	15	18	100	100		57
BIRCH	HPF18	tt1cgr	birch	16670	81	56	64	63	19	20	22	76	51	60	60	38	17	23	91	73	30	

## Change and Growth (1 vs 3 & 8 vs 10)

- 77% are sustained –similar year-by-year or single pooled
- Almost all young are picked up by same criteria HPF with no age restriction

## Absolute

- OECD (20% equivalent growth over 3 years) picks up almost all other HPFs (except Age 5)
- 75% are sustained (15 vs 16), but only 18% meet criteria in 3 consecutive years (15 vs 17)

**Birch** picks up most others

## Change vs Growth

- 64% of HPF1 (change) are also HPF8 (growth), but only 43% of HPF8 are HPF1 too

# Overlaps across different employment L-HPFs and value added V-HPFs

	HPF	HPFj		N	CHANGE							GROWTH							OECD			BIRCH
					tt3jcry HPF1	tt3jcr HPF2	tt3scry HPF3	tt3scr HPF4	15jcr HPF5	15cr HPF6	05jcr HPF7	tt3jgry HPF8	tt3jgr HPF9	tt3sgry HPF10	tt3sgr HPF11	tt3Sgry HPF12	15jgr HPF13	15sgr HPF14	tt3jga HPF15	tt3sga HPF16	tt3sgA HPF17	tt1cgry HPF18
change	HPF1	tt3jcry	change	14937		41	39	39	13	11	20	41	20	31	31	15	8	9	80	60	29	57
	HPF2	tt3jcr	best episode	9570	64		49	49	17	14	26	44	23	34	34	17	9	11	81	62	31	69
	HPF3	tt3scry	sustain	11564	55	44		44	15	12	21	43	20	36	36	17	9	10	82	67	34	60
	HPF4	tt3scr	sustain pooled	11374	55	44	45		15	12	22	43	20	36	36	17	9	10	82	68	35	60
	HPF5	15jcr	young	3226	63	53	50	50		33	47	51	28	41	41	23	26	25	84	67	34	71
	HPF6	15cr	young sustain	3325	56	46	46	46	34		36	53	29	45	45	25	22	27	85	71	34	67
	HPF7	05jcr	entry, age5	5555	65	55	48	48	33	24		28	14	22	22	11	11	11	62	47	21	62
growth	HPF8	tt3jgry	growth	22343	22	16	17	17	5	5	6		20	35	35	15	7	9	88	62	30	32
	HPF9	tt3jgr	best episode	9714	31	23	24	24	7	7	8	64		48	48	24	12	15	91	66	37	46
	HPF10	tt3sgry	sustained	16992	24	17	20	20	6	5	6	48	20		39	17	8	10	89	70	35	34
	HPF11	tt3sgr	sustained pooled	16843	24	17	20	20	6	5	6	48	20	40		17	8	10	90	70	36	34
	HPF12	tt3Sgry	only sustain	6730	34	25	28	28	9	8	9	67	34	56	56		14	18	92	74	43	50
	HPF13	15jgr	young	3197	35	27	28	28	21	17	17	71	39	57	58	32		35	92	72	42	53
	HPF14	15sgr	young sustain	4453	31	24	24	24	15	15	14	68	37	53	54	29	26		91	68	35	48
OECD	HPF15	tt3jga	absolute	48819	16	11	12	13	4	3	5	32	12	23	23	9	4	6		56	23	22
	HPF16	tt3sga	sustained	36830	18	13	14	15	4	4	5	33	13	26	26	10	5	6	83		27	24
	HPF17	tt3sgA	consecutive	8897	27	20	23	24	6	6	7	47	20	41	41	17	8	9	91	77		37
birch	HPF18	tt1cgry	birch	16670	44	34	34	34	11	9	16	46	21	35	35	16	8	10	84	63	31	

- Overall overlaps decreases, but still OECD definition covers more
- 56% are sustained (15 vs 16), but only 23% meet criteria in 3 consecutive years (15 vs 17)

# Determinants of being HPF

1. HPFs selected on amount of jobs or value added generated tend to be larger firms, while HPFs selected on growth rates tend to be evenly found across size categories
2. All HPFs are more likely to be young; the effect is not that large
3. The likelihood of certain sectors being more likely to have HPFs depends on whether HPFs are selected on employment or value added rather than on growth or change in levels

Note: coefficients are small (omitted category is Agriculture, Fishing and Forestry)

- Mining, construction and utilities are positive and significant for L-HPFs and only for growth V-HPF
- Textiles and apparel have negative coefficient for all HPFs
- Furniture is positive and significant for all HPFs selected on growth and negative for others
- Other manufacturing is positive for all V-HPFs and for L-HPF selected on growth
- Commerce, hotel and restaurants and business and finance are mostly negative
- Transport and communications tend to be positive for V-HPF selected on growth
- Other services are positive for HPFs selected on growth

$$HPF_{ist} = \beta_0 + \beta_{szk} * Sz_{ist} + \beta_{agm} * Ag_{ist} + \varphi Year_t + \theta I_s + \varepsilon_{ist} \quad (1)$$

measures at level of the firm I belonging to sector s at time t.

The regressions are not intended to be casual; the aim is to look at characteristics associated with being a future HPF, conditional on controlling for other initial characteristics.

### Determinants of being a High Performance Firm (at start)

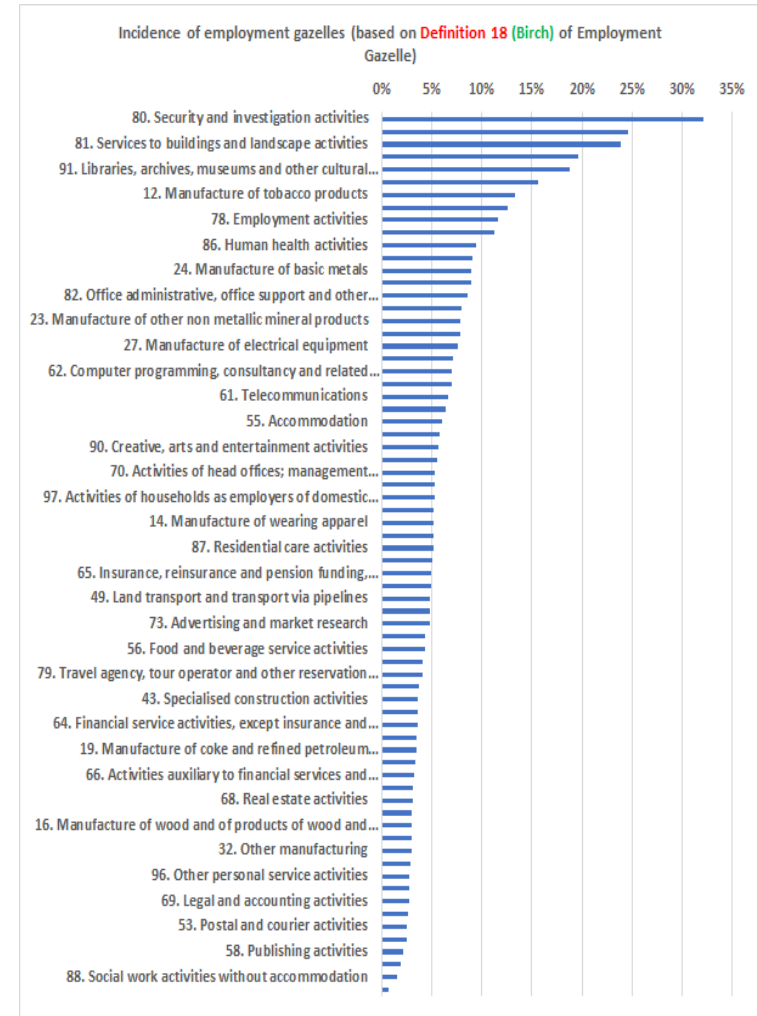
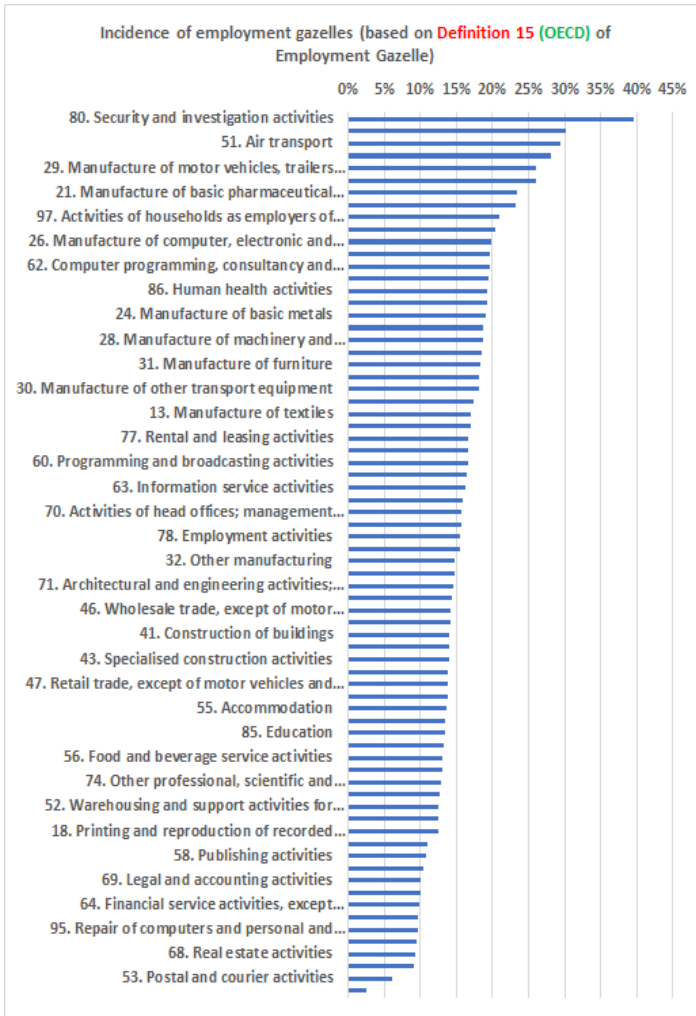
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	tt3jcry HPF1L	tt3scry HPF3L	tt3jgry HPF8L	tt3sgry HPF10L	OECD HPF15L	Birch HPF18L	tt3jcry HPF1rV	tt3scry HPF3rV	tt3jgry HPF8rV	tt3sgry HPF10rV	OECD HPF15rV	Birch HPF18rV
sz_20to49	0.112*** (0.00384)	0.0816*** (0.00342)	0.0345*** (0.00601)	0.0265*** (0.00460)	0.0781*** (0.00757)	0.0874*** (0.00385)	0.0992*** (0.00757)	0.0685*** (0.00535)	0.0337*** (0.00469)	0.0315*** (0.00274)	0.0691*** (0.00600)	0.0953*** (0.00486)
sz_50to99	0.363*** (0.0126)	0.289*** (0.0145)	0.103*** (0.0111)	0.0807*** (0.00886)	0.122*** (0.0113)	0.283*** (0.0104)	0.329*** (0.0188)	0.257*** (0.0158)	0.0527*** (0.00861)	0.0554*** (0.00787)	0.0804*** (0.00700)	0.264*** (0.0127)
sz_100to499	0.616*** (0.0232)	0.506*** (0.0294)	0.120*** (0.0139)	0.0972*** (0.0121)	0.119*** (0.0151)	0.483*** (0.0199)	0.564*** (0.0245)	0.465*** (0.0234)	0.0618*** (0.0118)	0.0658*** (0.00926)	0.0691*** (0.00873)	0.460*** (0.0199)
sz_500plus	0.790*** (0.0239)	0.622*** (0.0437)	0.0881*** (0.0134)	0.0856*** (0.0139)	0.0783*** (0.0224)	0.709*** (0.0215)	0.834*** (0.0174)	0.667*** (0.0195)	0.0236* (0.0137)	0.0481*** (0.0131)	0.0238 (0.0217)	0.711*** (0.0219)
age10_19	-0.00773** (0.00316)	-0.00917*** (0.00193)	-0.0198*** (0.00494)	-0.0276*** (0.00331)	-0.0119* (0.00652)	-0.0145*** (0.00399)	-0.00159 (0.00214)	-0.00294** (0.00122)	-0.0531*** (0.00391)	-0.0443*** (0.00205)	-0.0271*** (0.00554)	-0.0223*** (0.00265)
age20_29	-0.0114** (0.00466)	-0.0113*** (0.00287)	-0.0435*** (0.00941)	-0.0424*** (0.00593)	-0.0495*** (0.0115)	-0.0228*** (0.00486)	-0.00397 (0.00484)	-0.00283 (0.00200)	-0.0736*** (0.00536)	-0.0523*** (0.00380)	-0.0733*** (0.00670)	-0.0281*** (0.00486)
age30plus	-0.0259*** (0.00581)	-0.0233*** (0.00451)	-0.0841*** (0.00834)	-0.0687*** (0.00712)	-0.137*** (0.0158)	-0.0473*** (0.00728)	-0.0154*** (0.00502)	-0.0131*** (0.00379)	-0.0905*** (0.0108)	-0.0602*** (0.00572)	-0.152*** (0.0170)	-0.0389*** (0.00542)
MinUtilConstr	0.0338*** (0.00657)	0.00563* (0.00332)	0.0971*** (0.0141)	0.0330*** (0.00798)	0.0539*** (0.00896)	0.0596*** (0.00947)	-0.0145** (0.00634)	-0.0127*** (0.00376)	0.0622*** (0.0158)	0.0257*** (0.00831)	0.0452*** (0.00406)	0.00771 (0.00711)
TextApparel	-0.0175*** (0.00436)	-0.0125*** (0.00354)	-0.0150*** (0.00458)	-0.0118** (0.00472)	-0.0534*** (0.0136)	-0.0165*** (0.00508)	-0.0258** (0.0118)	-0.0121 (0.00740)	-0.0338*** (0.00781)	-0.00866 (0.00636)	-0.0214 (0.0173)	-0.0328* (0.0168)
Furniture	-0.0205*** (0.00139)	-0.0123*** (0.000938)	0.0220*** (0.00212)	0.0168*** (0.00141)	0.0349*** (0.00153)	-0.0123*** (0.00119)	-0.0343*** (0.00341)	-0.0177*** (0.00206)	0.0123*** (0.00365)	0.0319*** (0.00471)	0.0620*** (0.00196)	-0.0374*** (0.00372)
Other Manuf	-0.00195 (0.00339)	0.000306 (0.00250)	0.0162*** (0.00537)	0.0127*** (0.00443)	0.0254*** (0.00755)	0.00491 (0.00480)	0.0242*** (0.00622)	0.0203*** (0.00453)	0.0328*** (0.00637)	0.0384*** (0.00598)	0.0796*** (0.00465)	0.0413*** (0.00928)
Commerce	-0.0131*** (0.00295)	-0.0107*** (0.00305)	0.0118* (0.00608)	0.00424 (0.00461)	-0.00916** (0.00464)	-0.00427 (0.00396)	0.00806 (0.0151)	0.00484 (0.00782)	0.00696 (0.00682)	0.00727 (0.00462)	0.0275*** (0.00729)	0.0169 (0.0186)
TranspCommun	0.00942 (0.00940)	0.00138 (0.00525)	0.0616** (0.0292)	0.0362 (0.0220)	0.0438 (0.0448)	0.0283* (0.0170)	0.00625 (0.00794)	0.00794 (0.00501)	0.0608*** (0.0171)	0.0467*** (0.0137)	0.0662*** (0.0202)	0.0262* (0.0144)
Hotel&Rest	-0.00226 (0.00857)	-0.00530 (0.00688)	0.0209*** (0.00703)	0.0104 (0.00735)	-0.0103 (0.00772)	0.00885 (0.00901)	-0.0364*** (0.00887)	-0.0185*** (0.00540)	0.0293** (0.0147)	0.0122 (0.0100)	0.0140 (0.0189)	-0.0285* (0.0173)
Bus&Fin	-0.00289 (0.00818)	-0.00103 (0.00685)	-0.00745 (0.00804)	-0.00125 (0.00822)	-0.0705*** (0.0138)	0.00105 (0.00726)	0.0135 (0.0113)	0.000655 (0.00491)	0.00205 (0.0126)	-0.00462 (0.00734)	-0.0592*** (0.0208)	0.0233* (0.0131)
OtherServ	0.0300** (0.0151)	0.0124 (0.00787)	0.0752*** (0.0259)	0.0438*** (0.0159)	0.0462** (0.0230)	0.0456** (0.0200)	-0.00187 (0.00794)	-0.000847 (0.00512)	0.0844*** (0.0182)	0.0561*** (0.0145)	0.0741*** (0.0109)	0.0283*** (0.0106)
Year dummy	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	173,997	181,681	178,444	184,854	185,325	175,049	170,930	180,486	177,477	183,366	196,211	172,636

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

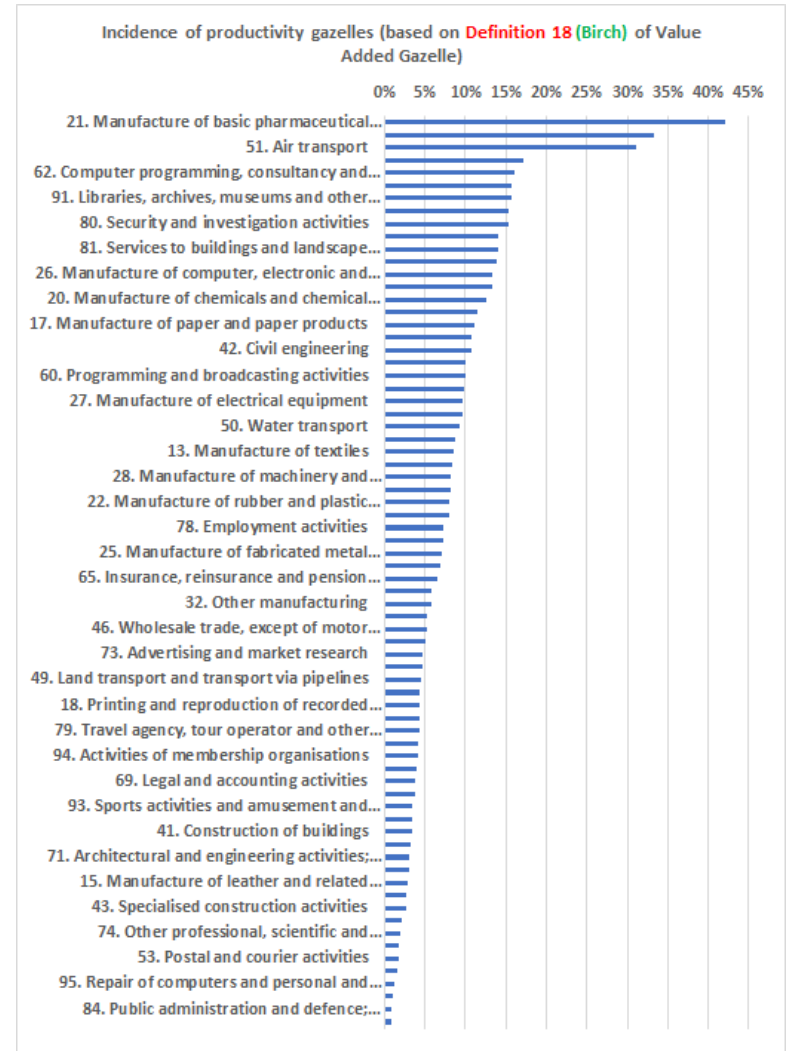
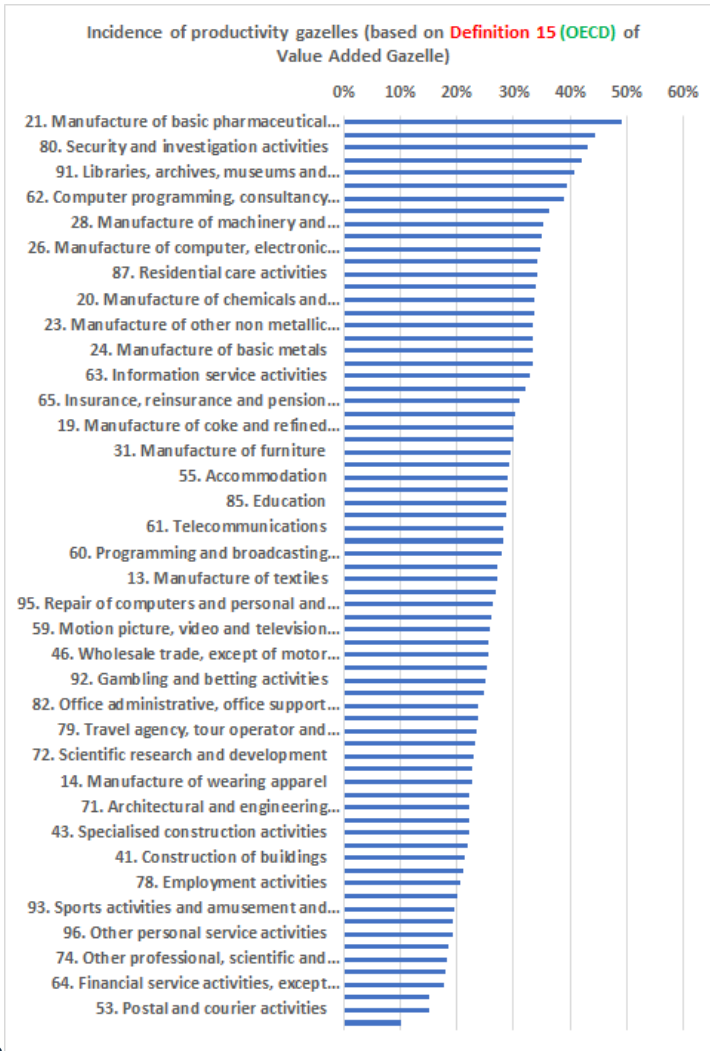
# What sectors stand out on employment HPFs?

## Examples

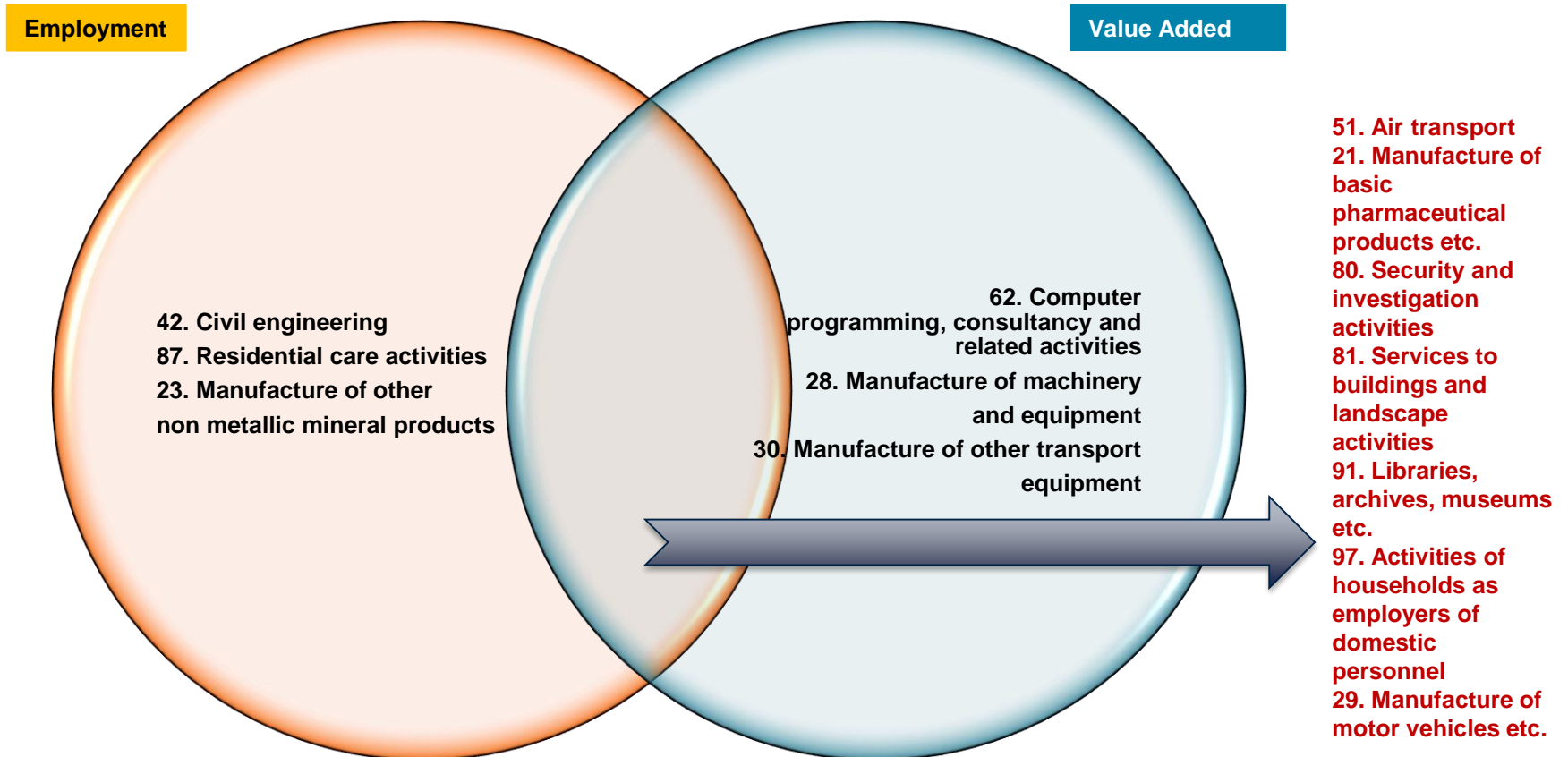


# What sectors stand out on value added HPFs?

## Examples



# Sectoral overlap between employment and value added HPFs: OECD definition





# Creating more & better jobs: Implications for Policy

## Non-gazelles

## Gazelles

Good jobs

60. Programming and broadcasting activities  
63. Information service activities  
77. Rental and leasing activities  
20. Manufacture of chemicals and chemical products

80. Security and investigation activities  
51. Air transport  
21. Manufacture of basic pharmaceutical products and pharmaceutical preparations  
62. Computer programming, consultancy and related activities  
26. Manufacture of computer, electronic and optical products

Bad jobs

10. Manufacture of food products  
11. Manufacture of beverages  
13. Manufacture of textiles  
31. Manufacture of furniture  
49. Land transport and transport via pipelines  
25. Manufacture of fabricated metal products, except machinery and equipment

12. Manufacture of tobacco products  
81. Services to buildings and landscape activities  
42. Civil engineering  
91. Libraries, archives, museums and other cultural activities  
23. Manufacture of other non metallic mineral products  
86. Human health activities



# Conclusion

1. Large firms create more jobs (higher selection of larger firms with *change* definitions).
2. Young firms are more likely to be high performing firms.
3. Sectors of HPFs in both dimensions (labor and productivity) vary widely, from low skill requiring sectors to higher skill requiring sectors.
4. For policymakers/academics: What to do with sectors in the red quadrant (non-gazelle/bad jobs), and how to help sectors in the grey quadrant to offer better quality jobs so the economy can benefit from their high performance.