The Dynamics of Inter-firm Networks and Firm Growth

by FUJII Daisuke, SAITO Yukiko Umeno and SENGA Tatsuro

Comments by

Tadashi Ito (Gakushuin University)

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Comment1: Importance of young firms (Literature)

Young firms add and drop links (“noisy selection mechanism”).

Can add some literature which emphasize a crucial role of young firms in economic growth.

In the stage of adding and dropping links, young firms innovate and grow rapidly.

“innovative contribution of new firms is so valuable that industrial policy should subsidize entrants at the same time as taxing incumbents (Acemoglu et al., 2013)” (Coad, Segarra and Teruel, Research Policy (2016)

Comment 2: Tokyo effect? (1/4)

The estimations include industry fixed effects.

How about Tokyo dummy or prefecture fixed effects?

pref_code	pref_name	num_firm	mean_sales	mean_profit	mean_sales_employee	mean_profit_employee
1	Hokkaido	77,915	500,601	13,924	27,188	669
2	Aomori	18,234	414,202	11,567	22,866	835
3	Iwate	15,627	524,152	17,510	21,666	817
4	Miyagi	27,433	734,037	21,005	28,304	994
5	Akita	14,948	351,373	10,619	19,322	555
6	Yamagata	16,748	394,764	10,588	18,605	568
7	Fukushima	25,399	539,294	12,660	23,338	1,018
8	Ibaragi	33,068	480,137	13,629	25,887	475
9	Tochigi	24,518	471,293	13,454	23,430	305
10	Gunma	28,889	495,070	21,399	24,555	798
11	Saitama	65,898	557,369	14,571	29,808	615
12	Chiba	54,014	560,624	17,380	28,465	616
13	**Tokyo**	**237,194**	**3,554,859**	**301,576**	**49,652**	**4,656**
14	Kanagawa	81,436	806,817	33,023	29,472	249
15	Niigata	34,462	463,678	17,844	23,341	702
16	Toyama	17,240	556,288	19,513	25,345	854
17	Ishikawa	16,992	500,139	14,750	24,622	594
18	Fukui	15,686	405,564	15,297	24,048	682
19	Yamanashi	13,779	351,638	19,051	21,780	516
20	Nagano	28,044	513,033	21,411	24,430	510
21	Gifu	24,681	573,198	14,360	27,370	748

Comment 2: Tokyo effect? (2/4)

22	Shizuoka	45,944	611,423	17,423	26,645	516
23	Aichi	84,510	1,309,621	60,565	34,991	778
24	Mie	22,291	463,743	10,879	29,101	780
25	Shiga	14,864	456,679	11,085	26,538	774
26	Kyoto	32,399	681,574	45,809	31,177	1,278
27	Osaka	115,894	1,402,951	47,363	38,070	1,082
28	Hyogo	57,142	730,439	24,013	31,669	791
29	Nara	13,469	374,092	8,433	28,118	1,106
30	Wakayama	13,818	415,165	10,682	23,801	646
31	Tottori	8,726	354,163	7,414	17,570	486
32	Shimane	11,123	355,156	7,446	19,348	559
33	Okayama	26,599	476,099	18,896	24,483	512
34	Hiroshima	41,091	659,358	22,123	34,964	752
35	Yamaguchi	17,813	477,918	28,663	22,553	675
36	Tokushima	11,173	400,685	14,389	20,621	280
37	Kagawa	15,608	526,220	17,717	23,349	481
38	Ehime	20,336	540,750	16,186	24,729	482
39	Kochi	10,363	426,534	6,337	24,395	511
40	Fukuoka	59,542	690,605	14,516	32,794	908
41	Saga	11,960	371,969	13,576	20,738	494
42	Nagasaki	15,834	444,526	10,130	24,608	472
43	Kumamoto	20,950	452,837	8,409	25,291	475
44	Oita	17,591	433,128	6,651	19,924	368
45	Miyagi	16,191	348,187	7,687	21,308	353
46	Kagoshima	19,449	492,115	7,360	22,723	360
47	Okinawa	16,655	448,408	11,845	24,703	931
Total		1,613,540				

Source: My own computation from TSR 2014

Comment 2: Tokyo effect? (3/4)

	Probit: $I_{Survival>0}$			
	(1)	(2)	(3)	(4)
Log buyer's age	0.0283***	0.0372***	0.0367***	-0.000448
	(0.00147)	(0.00160)	(0.00160)	(0.00163)
Log seller's age	0.0878***	0.0689***	0.0676***	0.0254***
	(0.00143)	(0.00154)	(0.00154)	(0.00157)
Log buyer's sales		-0.00361***	-0.000732***	-0.00209***
		(0.000402)	(0.000413)	(0.000415)
Log seller's sales		0.0190***	0.0226***	0.0188***
		(0.000454)	(0.000468)	(0.000471)
Log link distance			-0.0174***	-0.0147***
			(0.00057)	(0.000573)
Age dummy 2				0.175***
				(0.00290)
Age dummy 4				0.232***
				(0.00316)
Age dummy 6				0.356***
				(0.00264)
N	3,282,948	3,211,750	3,211,750	3,211,750
Industry F.E.	Yes	Yes	Yes	Yes

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Robust standard errors are reported

Table 3: Stability of inter-firm linkages

Locating in Tokyo might be facilitating firm linkages, and also may affect firm growth by agglomeration effect?

Might be interesting to interact Link distance and Tokyo dummy. The negative distance effect might be attenuated by being located in Tokyo.

Comment 2: Tokyo effect? (4/4)

My quick and dirty regression

Agglomeration matters.

Simple regression

	(1) DepVar_mean sales	(2) DepVar_mean profit	(3) DepVar_mean salesempl	(4) DepVar_mean profitempl
num_firm	11.90***	0.976***	0.128***	0.0129***
	(17.33)	(11.75)	(11.49)	(8.54)
r2	0.870	0.754	0.746	0.619
N	47	47	47	47

t statistics in parentheses

="* p<0.0 ** p<0.01 *** p<0.001"

Source: My own estimations using TSR 2014

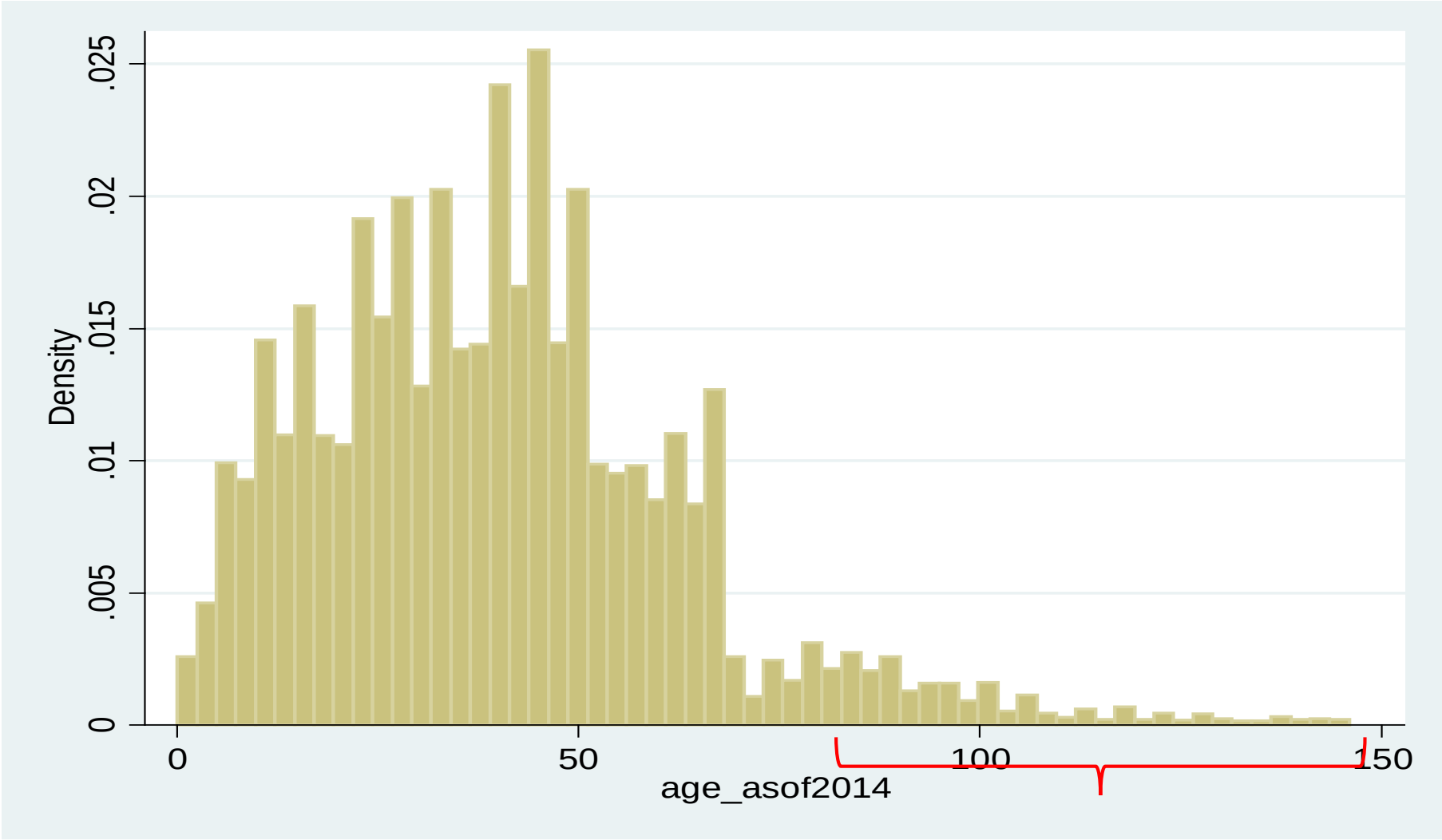
Comment 3

- Many M&A → Firm age (probably older one's taken) → Old firms tend to be large firms.

→ Better to include Herfindahl index on top of industry fixed effects, especially in the estimation for Table 4: Firm growth rates and age groups.

Comment 4: Age distribution (1/3)

Histogram of age (from TSR 2014, my own computation) Many old firms

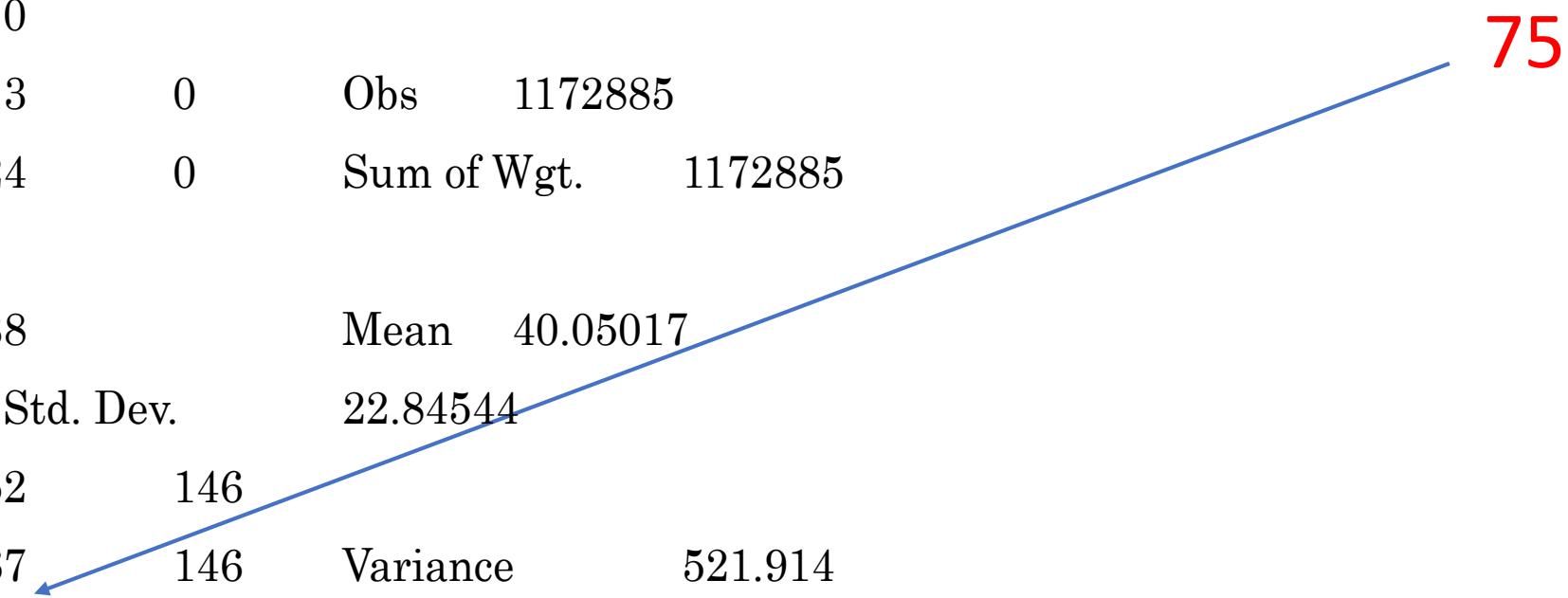


Comment 4: Age distribution (2/3)

Winsorization at the age 75. (Better to mention justification)

Summary statistics of age (from TSR 2014 data, my own computation)

Percentiles	Smallest			
1%	30			
5%	80			
10%	13	0	Obs	1172885
25%	24	0	Sum of Wgt.	1172885
50%	38		Mean	40.05017
	Largest	Std. Dev.		22.84544
75%	52	146		
90%	67	146	Variance	521.914
95%	83	146	Skewness	.9567833
99%	112	146	Kurtosis	4.611224



Comment 4: Age distribution (3/3)

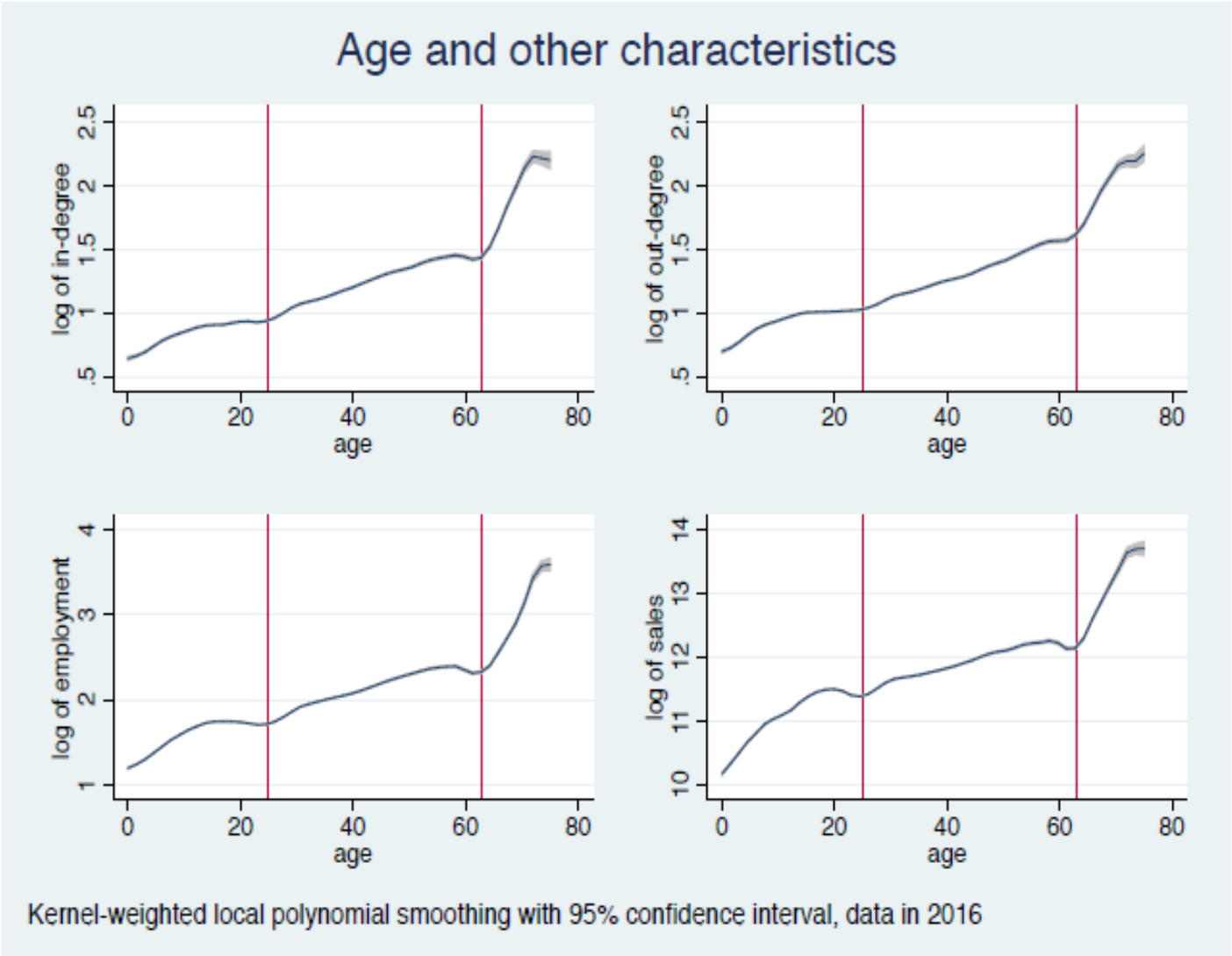


Figure 3: Age and firm size measures

Systematic difference at the age 63?
2016-63=1945 (defeat of Japan in the WWII)

Might be worth exploring if systematic difference between pre-war and post war firms in Japan

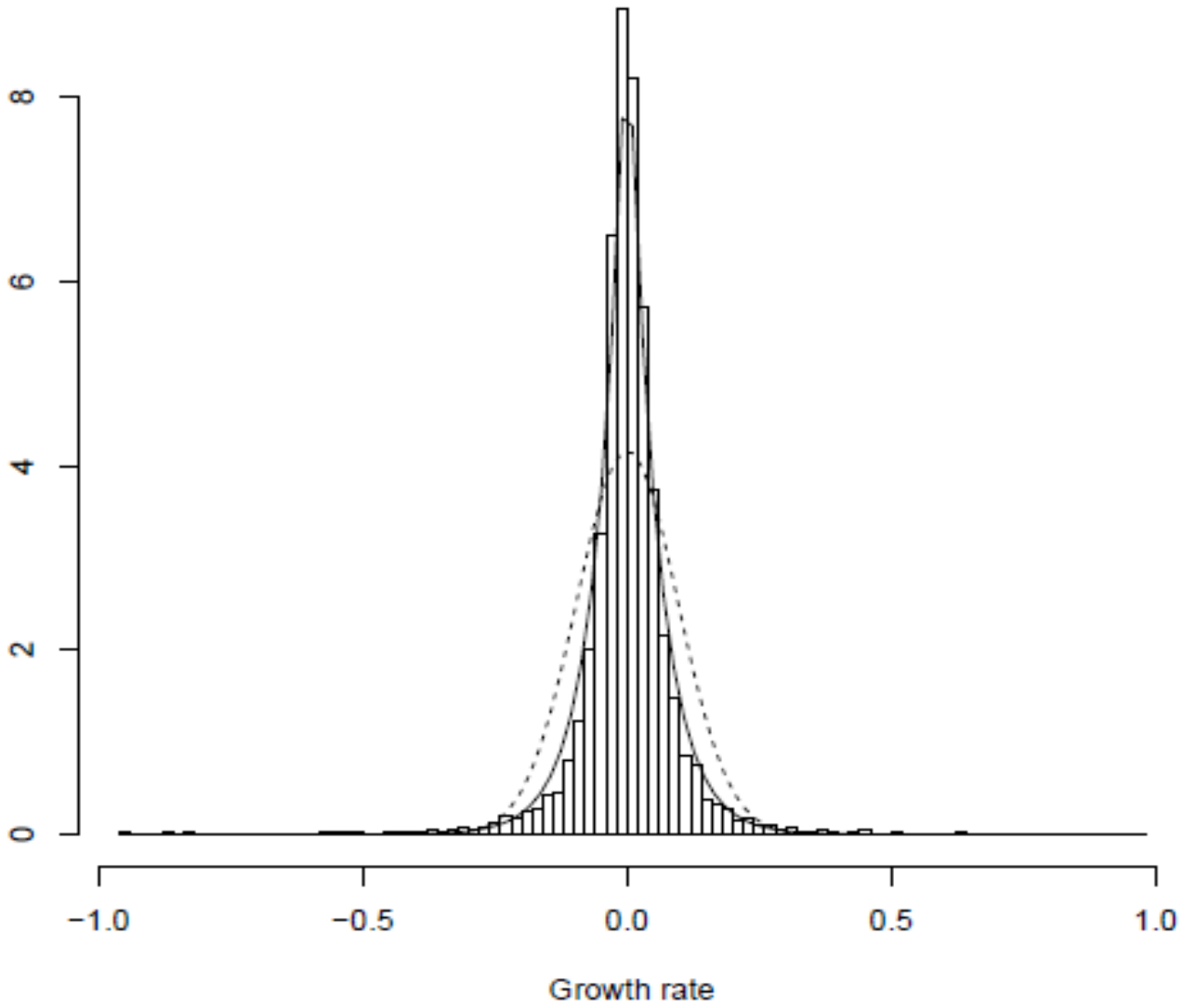
Comment 5: Any nexus between rapid growth and firm linkage? (1/4)

One of the main themes of the paper is firm growth.

For firm growth, “jumps” matter.

‘the growth process is predominantly determined by a few large jumps rather than continuous movements.’ (Arata 2014, RIETI DP)

Comment 5: Any nexus between rapid growth and firm linkage? (2/4)



Predominantly large number of firms do not grow (around the centre).

This distribution, of which kurtosis is much higher than the Normal distribution, can be explained by "jumps", not incremental growth. (Arata (2014)).

Source: Arata (2014)

Comment 5: Any nexus between rapid growth and firm linkage? (3/4)

Jumps!

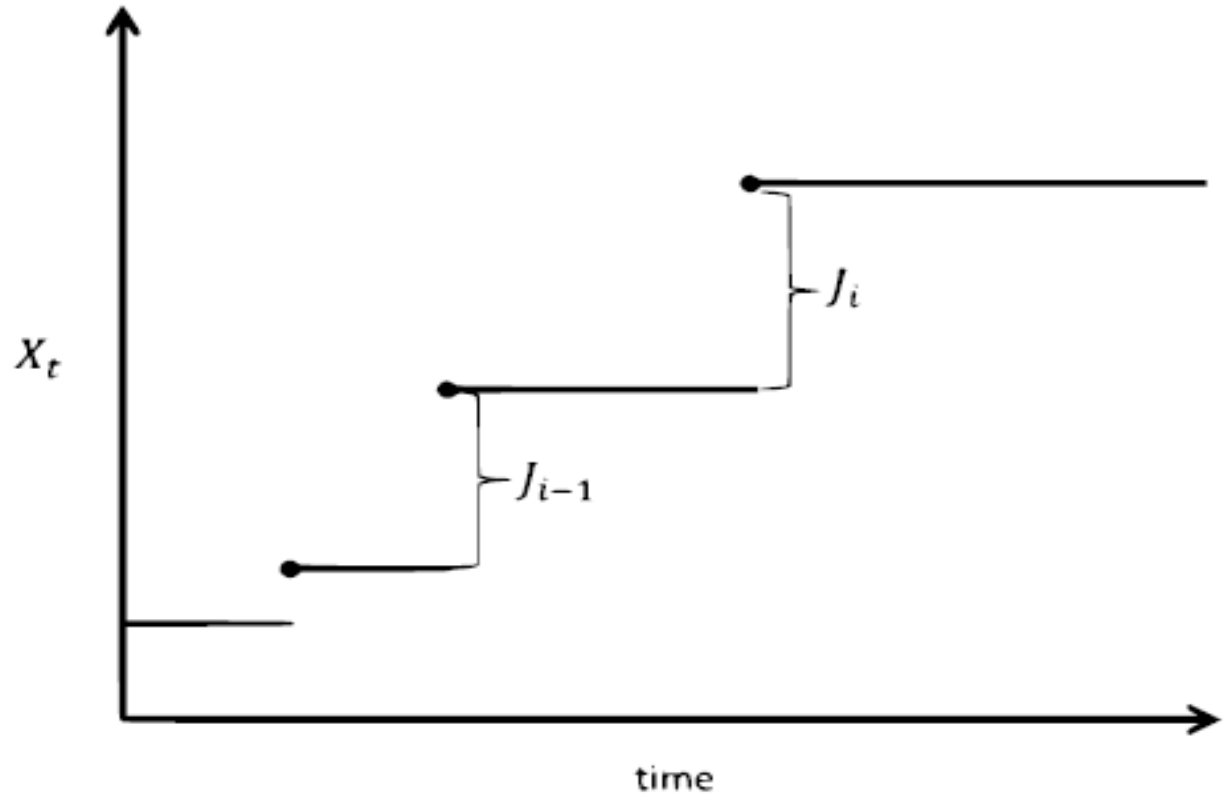


Figure 2: A sample path of X_t.

Source: Arata (2014)

Comment 5: Any nexus between rapid growth and firm linkage? (4/4)

$\rightarrow$You might find something interesting by investigating if

a sudden and large growth $\leftrightarrow$ rapid extension of firm linkages.

Minor comment 1: Spike in number of firms born in 1989

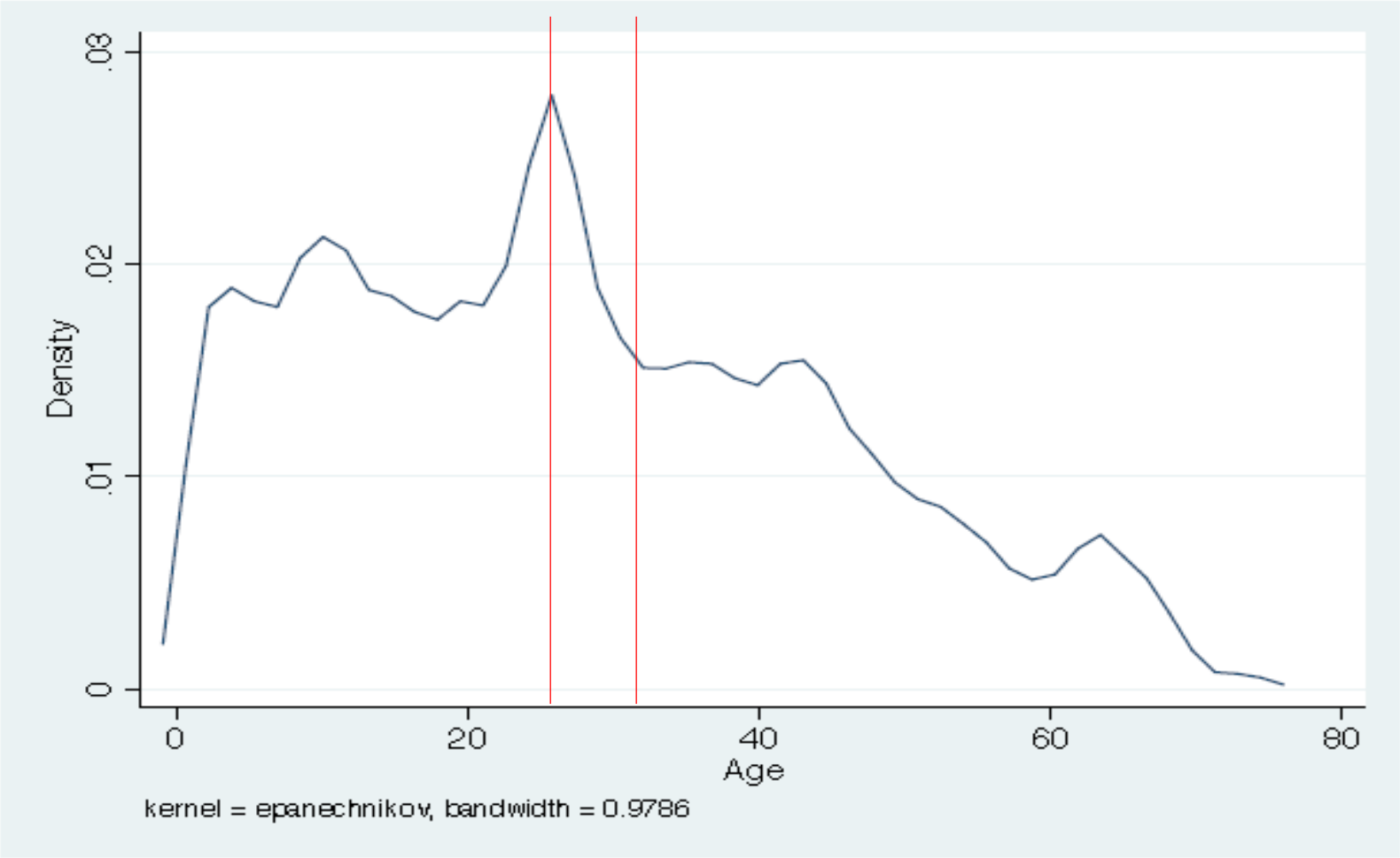


Figure 1: Age distribution in 2016

You can mention the bubble (asset-inflated) economy of 1985-1989.

Minor comment 2: Typo

Page 10, line 17, 23: “exit” $\rightarrow$ “exist” (?)