The Impact of Exports on Innovation: Theory and Evidence

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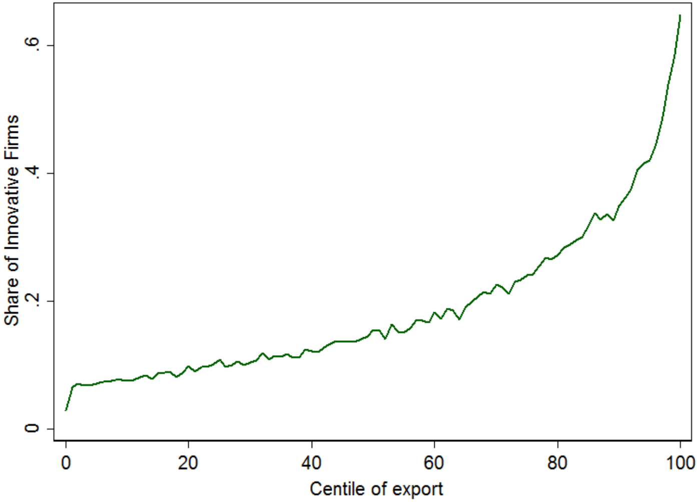
Plan

Innovating Firms Are Concentrated Among Largest Exporters



Introduction (2)

- Does this relationship reflect a causal effect of export on innovation?
- What lies behind this causal effect?

- In this paper we use exhaustive firm-level data covering all French exporting firms to analyze how new export opportunities impact their innovation performance.

Introduction (3)

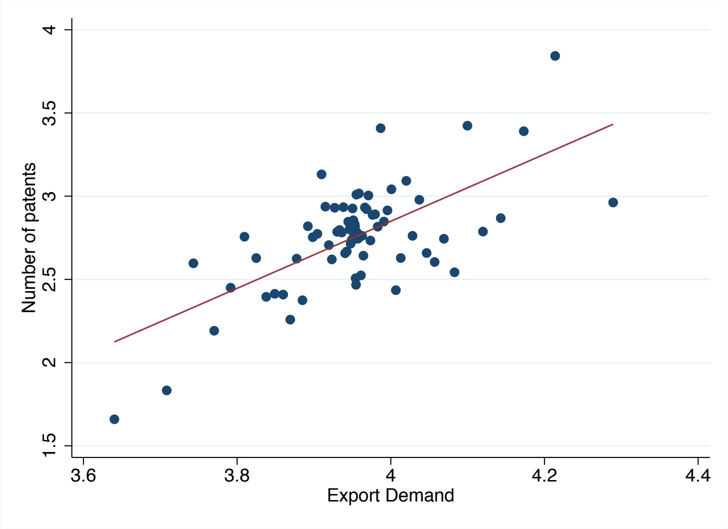
- To address these questions
  $\longrightarrow$ we merge three exhaustive firm-level datasets - patenting, customs and administrative tax data-, which cover the whole population of French firms
  $\longrightarrow$ we then analyze how the expansion of export markets affects the quantity and quality of patents by these firms.
- To disentangle the direction of causality between innovation and export performance, we construct a firm-level export demand shock.
  $\longrightarrow$ This variable responds to aggregate conditions in a firm's export destinations but is exogenous to firm-level decisions (including the concurrent decisions for export-market participation).

Introduction (4)

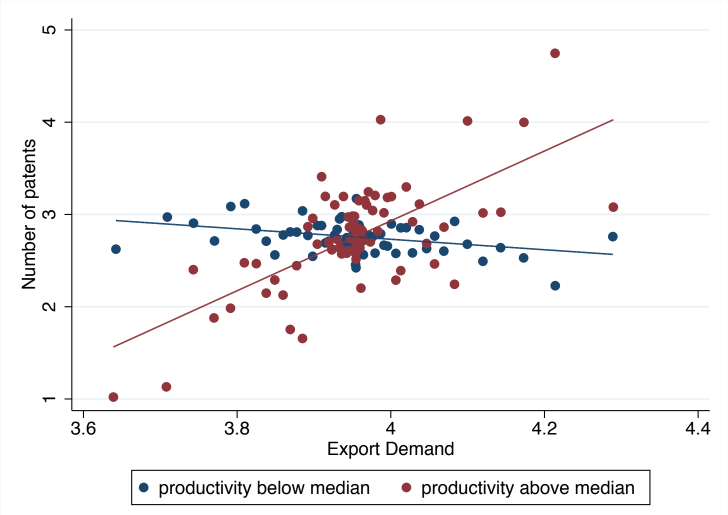
- We show that:
  1. Firms' patenting responds positively to a positive export demand shock
  2. This effect is substantially stronger for firms that are initially more "frontier" in their sectors ...
  3. The competition effect dominates for initially less productive firms

  $\longrightarrow$ Overall, our results speak to the existence of both, a *market size* effect and a *competition effect* of the export shock

A higher exogenous demand shock increases the number of patents filed by the firm



...more so for frontier firms



Related Literature

- **Innovation, trade and growth:**
  $\longrightarrow$ Grossman and Helpman, 1991; Coe and Helpman; 1995
- **Competition and innovation:**
  $\longrightarrow$ Aghion et al, 1997, 2001, 2005
- **Import competition, innovation and productivity growth**
  $\longrightarrow$ Bloom et. al., 2011; Iacovone and Keller, 2011; Tabellini, 2015; Autor et. al., 2016; Aghion et. al., 2005. Bombardini et al., 2017
- **Exports, and innovation**
  $\longrightarrow$ Lileeva and Trefler,2007; Bustos, 2011; Guadalupe et al., 2012

Related Literature (Cont.)

- **Trade, competition and innovation:**
  $\longrightarrow$ Akcigit et al., 2017

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Source of data

- **Patent data:** `PATSTAT Spring 2016` contains detailed information about patent applications, inventor's country of residence, and patent citations
- **Firm-level accounting data:** `FICUS/FARE` data provide information on total sales, exports, number of employees, sector identification...drawn from compulsory reporting of firms and income statements to fiscal authorities in France
  $\longrightarrow$ data cover all French firms from 1994 to 2012
- **Exports data:** `French Customs` provide detailed data on French exports by product and country of destination for each French firm.
  $\longrightarrow$ data for whole 1994-2012 period, and covers more than 10,000 products

Source of data (Cont.)

- We use CEPII's BACI database to build our export demand variable

- **Matching:**
  1. Merging administrative firm-level data from FICUS/FARE and Customs data is easy as a firm can be identified by its *Siren* identifier in both datasets.
  2. To link patent data with firm-level accounting data, we rely on a matching algorithm by Lequien et al. (2017) based on the name and address of the firm as it appears on the patent application

Source of data (Cont.)

Patstat only reports the name of the firm, not its identifying number.
⇒ link the firm name in PATSTAT and in SIRENE (official list of all firms) (Lequien et al., 2017)

1. for each SIRENE name, find a small subset of possible PATSTAT matches
   - perform cleaning and phonetic encoding of names
   - find the PATSTAT names containing the least frequent (*ie* most informative) words of the SIRENE name
2. computation of parameters for the comparison model (Levenshtein distances between the names (raw and clean), zip code comparison . . .)
3. matching with supervised learning
   - estimate the parameters from a sample from Inpi with 15,000 true matches, randomly split into a learning and a verification sample
   - apply this model on all the possible matches previously identified.

   ⇒ in 90% of cases, unique match. Else further filtering with decision tree

Recall rate (share of all the true matchings that are accurate): 86.1%
Precision rate (share of the identified matches that are accurate): 97.0%

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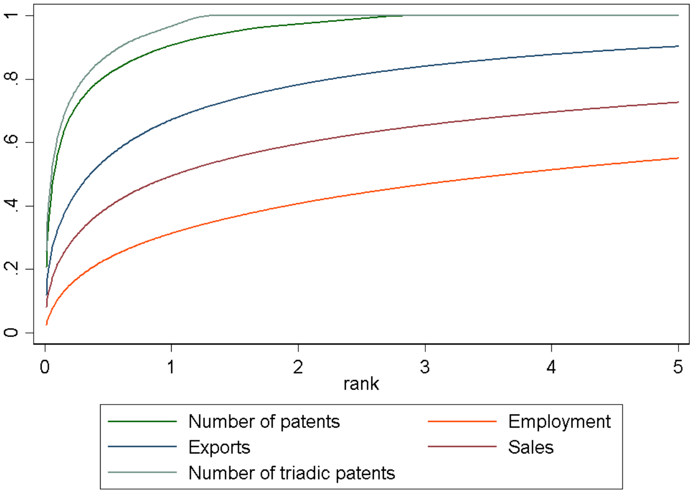
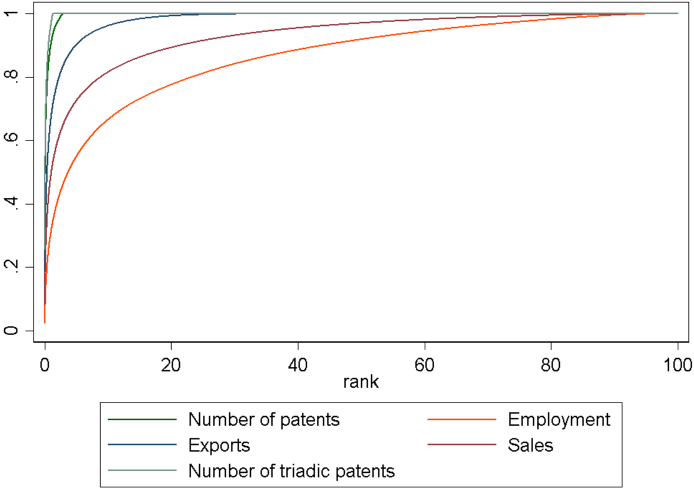
Sample restrictions

- We restrict our main working sample to:
  - Firms with more than 10 employees (due to accuracy of matching algorithm with patent data)
  - Private firms (drops state-owned, self-employed, non-profit)
  - $\longrightarrow$ 835,000 firms
- Further focus on manufacturing sector: observe product-level exports for goods produced by firm
  - $\longrightarrow$ 105,000 firms
  - But contains bulk of exports and innovation:
    Only 'lose' 33% of patents and 20.6% of exports (non-manufacturing)
- Within this sample, define "exporter" and "innovator" status across years (at least once during our sample years)

Skewness of export and innovation



Skewness of export and innovation



Exporters and Innovators are Bigger

	Non-exporters		Exporters		Total
	Non-innovator	Innovator	Non-innovator	Innovator	
Firms	45,707	385	51,221	6,770	104,083
Employment	17	21	52	235	59
Sales	2,173	2,530	11,671	69,906	14,075
Value Added	646	908	2,775	16,242	3,354
Age	14	15	20	22	18
Exports	0	0	2,440	23,155	3,622
Countries	0	0	5	18	5
Patents	0	0.2	0	2.6	0.3

Exporters and Innovators are Bigger: Premia

Panel 1: Premium for being an exporter (among all manufacturing firms)

	(1)	(2)	(3)	Obs.	Firms
log Employment	0.851	0.762	-	931,309	90,688
log Sales	1.613	1.474	0.417	972,956	103,404
log Wage	0.132	0.097	0.110	929,756	90,653
log Value Added Per Worker	0.217	0.171	0.176	918,062	90,055

Panel 2: Premium for being an innovator (among all exporting manufacturing firms)

	(1)	(2)	(3)	Obs.	Firms
log Employment	1.038	0.993	-	639,938	57,267
log Sales	1.277	1.233	0.197	650,0134	57,901
log Wage	0.15	0.095	0.110	638,955	57,253
log Value Added Per Worker	0.203	0.173	0.180	629,819	56,920
log Export Sales (Current period exporters)	2.043	1.970	0.859	433,456	56,509
Number of destination countries	13	12	7	656,609	57,991

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Exogenous export demand variable

- Following Mayer et al (2016) we construct a variable exogenously predicting the export demand faced by each firm at each year
- Consider a firm f who exports product s to destination j in an initial date t_0
- Main idea:
  - Subsequent changes in destination j's imports of product s from the world (excluding France), M_{jst} for $t > t_0$, will be a good proxy for firm f's export demand
  - ... but exogenous to changes in firm f (in particular innovation choices)

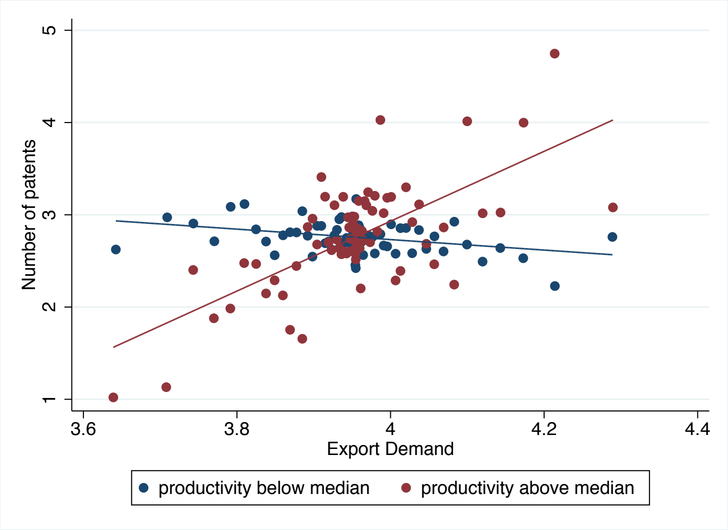
Exogenous export demand variable

- Formally, let:

$$D_{ft}^{M_s} = \frac{X_{ft_0}^*}{S_{ft_0}^*} \sum_{j,s} \frac{X_{fjst_0}}{X_{ft_0}} \log M_{jst}$$

  - M_{jst} denotes country j's imports of product s from the world except France at t.
  - $\frac{X_{fjst_0}}{X_{ft_0}}$ is the ratio of firm f's exports of product s to country j over all exports of f at t_0.
  - $\frac{X_{ft_0}^*}{S_{ft_0}^*}$ denotes firm f's export intensity at t_0.
- We construct similar variables using country j's GDP or imports aggregated at the industry level instead of M_{jst}: $D_{ft}^{M_I}$ and D_{ft}^{G}
- Use $D_{ft} - \bar{D}_f$ as measure of firm export demand at time t

Patenting Response to Export Shock



Regression Equation

- Exploit within-firm variation with firm fixed-effects
- Control for any sector-level changes with sector-time fixed-effects
- Measure firm innovation output Y_{ft} as the number of new patents in year t:

$$Y_{ft} = \alpha \ D_{ft} + \beta \ D_{ft} * d_f + \chi_{s,t} + \chi_f + \varepsilon_{ft},$$

where d_f is the productivity decile of the firm at t_0

  - Autocorrelation and heteroskedasticity robust standard errors using the Newey-West variance estimator with a bandwidth set to 5 years

Baseline results

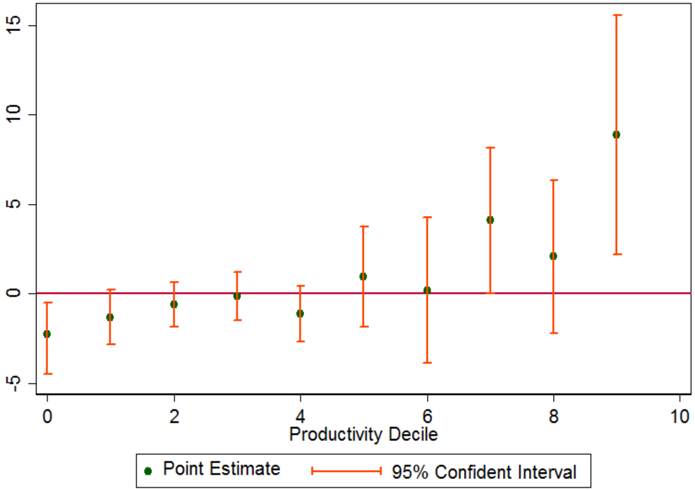
Dependent variable	Number of patents			Number of triadic patents		
Demand measure	$D_{ft}^{M_s}$ (1)	$D_{ft}^{M_l}$ (2)	D_{ft}^{G} (3)	$D_{ft}^{M_s}$ (4)	$D_{ft}^{M_l}$ (5)	D_{ft}^{G} (6)
Demand	-3.269***	-2.585**	-3.037**	-1.308**	-0.215	-0.729
	(1.014)	(1.056)	(1.466)	(0.589)	(0.637)	(0.791)
Decile × Demand	0.962***	0.911***	0.852**	0.366***	0.290**	0.255
	(0.255)	(0.304)	(0.394)	(0.134)	(0.145)	(0.198)
Nb of observation	77,901	77,918	77,002	77,901	77,918	77,002
R^2	0.905	0.897	0.901	0.774	0.770	0.775

- Average impact of a 10% increase in the trade shock:
  - 1.3 *fewer* patents for lowest decile
  - 2.1 *additional* patents for highest decile
  - 0.4 *additional* patents per productivity decile

Other Patent Indicators

Dependent variable	All	Triadic	Prior	Only granted	Families
Demand Measure	$D_{ft}^{M_s}$ (1)	$D_{ft}^{M_s}$ (2)	$D_{ft}^{M_s}$ (3)	$D_{ft}^{M_s}$ (4)	$D_{ft}^{M_s}$ (5)
Demand	-3.269***	-1.308**	-1.366***	-1.201*	-2.788***
	(1.014)	(0.589)	(0.502)	(0.629)	(0.776)
Decile $\times$ Demand	0.962***	0.366***	0.409***	0.364**	0.772***
	(0.255)	(0.134)	(0.133)	(0.155)	(0.204)
Nb of observation	77,901	77,901	77,901	77,901	77,901
R^2	0.905	0.774	0.844	0.908	0.878

No Parameter Restrictions Across Productivity Deciles



High Versus Low Competition Destinations

Dependent variable	Number of patents	Number of triadic patents
Demand (low competition)	1.390	2.042
	(3.437)	(2.882)
Demand (high competition)	-4.775***	-1.904**
	(1.602)	(0.742)
Decile×Demand (low comp.)	0.363	0.448
	(1.003)	(0.500)
Decile×Demand (high comp.)	1.335***	0.382**
	(0.437)	(0.193)
Nb of observation	74,646	74,646

Controlling for "Pre-Trends"

Dependent variable	Number of patents			Number of triadic patents		
Demand Measure	$D_{ft}^{M_s}$ (1)	$D_{ft}^{M_l}$ (2)	D_{ft}^{G} (3)	$D_{ft}^{M_s}$ (4)	$D_{ft}^{M_l}$ (5)	D_{ft}^{G} (6)
Demand	-2.876***	-2.480***	-1.459	-1.434**	-0.145	-0.783
	(0.975)	(1.137)	(1.584)	(0.661)	(0.690)	(0.993)
Decile × Demand	0.900***	0.921***	0.538	0.441***	0.410**	0.447
	(0.267)	(0.340)	(0.462)	(0.170)	(0.174)	(0.274)
Nb of observation	77,901	77,918	77,002	77,901	77,918	77,002
R^2	0.906	0.897	0.901	0.775	0.771	0.778

Control For Firm Size

Dependent variable	Number of patents					
Demand measure	$D_{ft}^{M_s}$ (1)	$D_{ft}^{M_s}$ (2)	$D_{ft}^{M_s}$ (3)	$D_{ft}^{M_s}$ (4)	$D_{ft}^{M_s}$ (5)	$D_{ft}^{M_s}$ (6)
Demand	-3.269***	-3.436***	-3.286***	-3.220***	-2.807***	-3.288***
	(1.014)	(1.039)	(1.024)	(1.017)	(1.004)	(1.012)
Decile $\times$ Demand	0.962***	0.971***	0.954***	0.960***	0.876***	0.977***
	(0.225)	(0.263)	(0.257)	(0.256)	(0.258)	(0.255)
Size		0.603***	0.696***	1.257***	2.007***	1.227***
		(0.114)	(0.096)	(0.201)	(0.350)	(0.187)
Nb of observation	77,901	76,236	76,678	76,860	77,240	77,605
R^2	0.905	0.908	0.906	0.906	0.906	0.906

Remove Leaders

Dependent variable	All	Triadic	Prior	Only granted	Families
Demand Measure	$D_{ft}^{M_s}$ (1)	$D_{ft}^{M_s}$ (2)	$D_{ft}^{M_s}$ (3)	$D_{ft}^{M_s}$ (4)	$D_{ft}^{M_s}$ (5)
Demand	-2.820***	-0.804***	-1.058**	-0.664	-2.478***
	(0.970)	(0.268)	(0.464)	(0.589)	(0.734)
Decile $\times$ Demand	0.766***	0.187***	0.318***	0.213	0.640***
	(0.239)	(0.064)	(0.118)	(0.151)	(0.184)
Nb of observation	77,790	77,790	77,790	77,790	77,790
R^2	0.905	0.903	0.839	0.909	0.873

Long Differences

- We also explore an alternate estimation strategy in long differences.
- We decompose our full 1996-2011 sample into two periods $p \in \{p_0, p_1\}$ of equal length
- Our demand variable is now measured in log differences as:

$$\Delta D_f^{M_s} = \frac{X_{fp_0}^s}{S_{fp_0}} \sum_{j,s} \frac{X_{fjsp_0}}{X_{fp_0}} \log \frac{M_{jsp_1}}{M_{jsp_0}},$$

  where all trade flows are aggregated over each period p_0 and p_1
- Similarly we measure innovation output ΔY_f as the introduction of new patents in period p_1
- Our estimating equation then becomes (we drop the firm fixed-effects but keep a sector fixed effect, and add the firm's productivity decile as a control):

$$\Delta Y_f = \alpha \, \Delta D_f^{M_s} + \beta \, \Delta D_f^{M_s} * d_f^{M_s} + \gamma \, d_f + \chi_s + \varepsilon_f,$$

Long Differences: Results

Dependent variable	Number of patents	Number of citations
Sample period	1995 – 2012	1995 – 2012
	(1)	(2)
Decile	0.339***	0.260**
	(0.004)	(0.020)
Demand	-5.001	-6.017
	(0.195)	(0.130)
Decile × demand	2.707***	2.293**
	(0.003)	(0.020)
Nb of observation	4,754	4,754
R^2	0.023	0.010

Response of other firms' characteristics (1)

	Panel 1: All exporting firms		**Panel 2:** Highly export intensive firms	
Dependent variable	Employment	Sales	Employment	Sales
Demand measure	$D_{ft}^{M_s}$ (1)	$D_{ft}^{M_s}$ (2)	$D_{ft}^{M_s}$ (3)	$D_{ft}^{M_s}$ (4)
Demand	0.031***	0.025**	0.039***	0.029**
	(0.008)	(0.011)	(0.011)	(0.014)
Nb of observation	69,472	69,793	33,167	33,319
R^2	0.158	0.143	0.179	0.160

Response of other firms' characteristics (2)

	Panel 1: All exporting firms		**Panel 2:** Highly export intensive firms	
Dependent variable	Employment	Sales	Employment	Sales
Demand measure	$D_{ft}^{M_s}$	$D_{ft}^{M_s}$	$D_{ft}^{M_s}$	$D_{ft}^{M_s}$
	(1)	(2)	(3)	(4)
Demand	-0.018	-0.019	-0.005	-0.015
	(0.016)	(0.020)	(0.017)	(0.023)
Decile × Demand	0.009***	0.009***	0.008***	0.008**
	(0.003)	(0.003)	(0.003)	(0.003)
Nb of observation	69,472	69,793	33,167	33,319
R^2	0.158	0.143	0.179	0.160

R&D measures of innovation vs patents

Dependent variable	Number of patents		Number of triadic patents	
sample	always in R&D sample (1)	R&D sample (2)	always in R&D sample (3)	R&D sample (4)
Demand	-21.92*	-8.873**	-6.828	-2.823
	(10.040)	(3.340)	(6.069)	(2.157)
Decile * Demand	5.435**	2.222**	2.231	0.768*
	(1.930)	(0.714)	(1.167)	(0.387)
Nb of observation	5,225	21,480	5,225	21,480
R^2	0.926	0.913	0.782	0.774

R&D measures of innovation vs patents (Cont.)

Dependent variable	Total R&D budget		Nb of researchers	
sample	always in R&D sample (1)	R&D sample (2)	always in R&D sample (3)	R&D sample (4)
Demand	-6,632.5	-1,441.1	-52.29*	-17.67
	(9,952.759)	(3,015.621)	(26.519)	(9.531)
Decile * Demand	2,347.0	1072.7	7.844	4.181
	(2,154.946)	(720.490)	(6.154)	(2.321)
Nb of observation	4,990	20,030	5,218	20,662
R^2	0.935	0.932	0.854	0.870

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Conclusion

- We showed that:
  1. Firms' patenting responds positively to a positive export demand shock
  2. This effect is substantially stronger for firms that are initially more "frontier" in their sectors ...
  3. The competition effect dominates for initially less productive firms

  $\longrightarrow$ Overall, our results speak to the existence of both, a *market size* effect and a *competition effect* of the export shock

CROISSANCE, RÉALLOCATION ET DYNAMIQUE DES ENTREPRISES

PHILIPPE AGHION - 2017

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COURS 7

PHILIPPE AGHION – 21/11/17

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LE RETOUR DE LA RENTE?

PHILIPPE AGHION – 21/11/17

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INTRODUCTION

- **Emmanuel Farhi**
- Tendance longue qui a pris corps au cours des 20 dernières années : le retour de la rente économique au sens défini par Ricardo de la compensation d’un facteur économique au-delà de la valeur des ressources mises en œuvre pour sa constitution.
- Quelles en sont les signes ? Quelles en sont conséquences pour le dynamisme économique, sa contribution à la dynamique des inégalités ?

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INTRODUCTION

Augmentation de la concentration dans la majorité des industries au cours des 20 dernières années 1997-2017 :

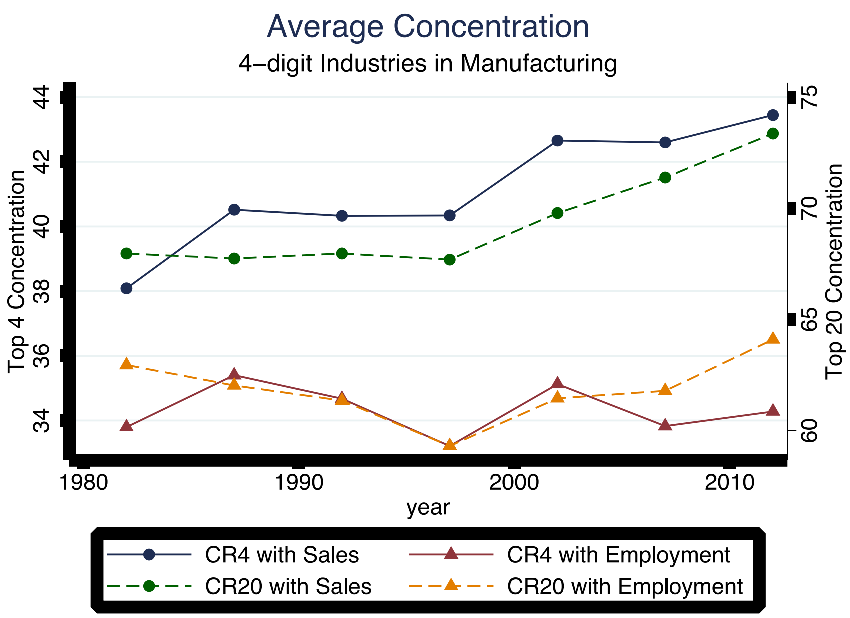
- Ex. concentration dans le secteur des technologies de l'information avec l'apparition de nouveaux géants du web, les GAFAM (Google, Apple, Facebook, Amazon, Microsoft).
- Ex. le pourcentage d'industries où les 4 plus grosses entreprises contrôlent plus de 30% du marché a augmenté de 30% à 40% ;

INTRODUCTION

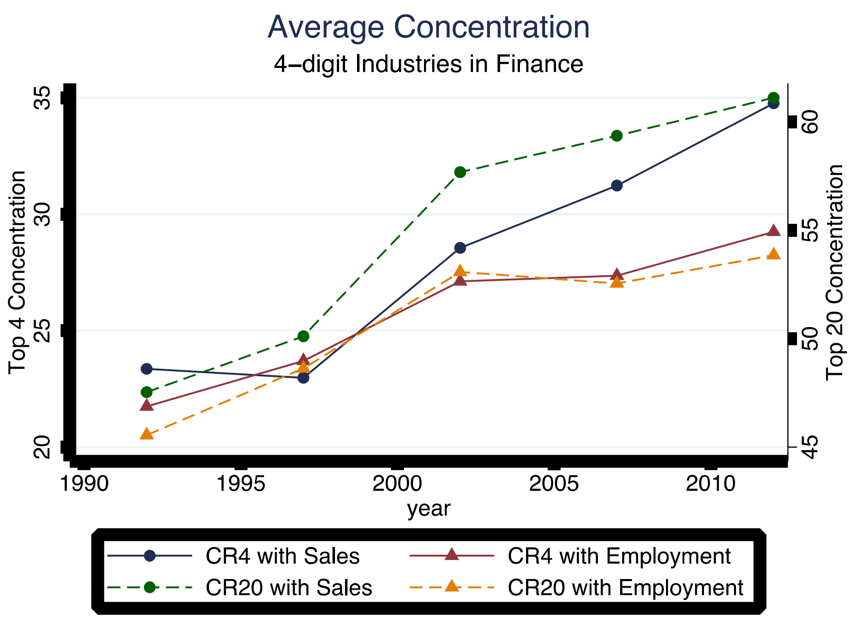
- Ex. dans le secteur du commerce grand public, la part des 50 plus grosses entreprises a augmenté de 10% ;
- Ex. dans la finance, la part des 10 plus grandes banques dans les prêts aux particuliers et aux entreprises a augmenté de 30% à 50%.

CONCENTRATION : RÉSULTATS EMPIRIQUES

Manufacturing Sector



Finance Sector



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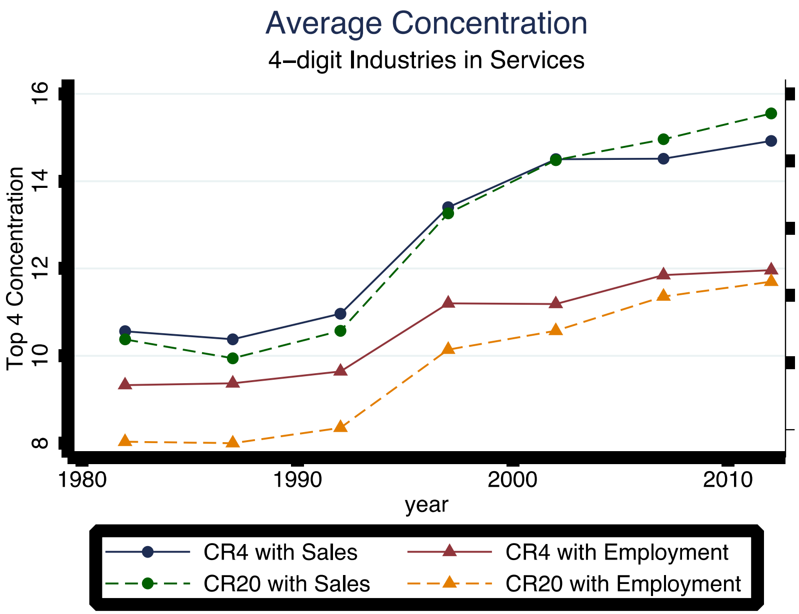
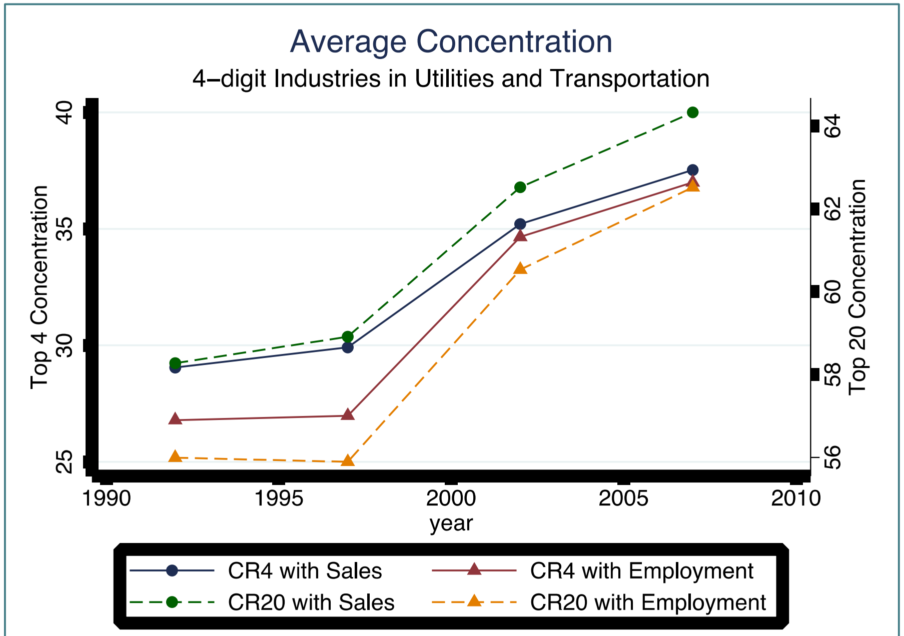
CONCENTRATION : RÉSULTATS EMPIRIQUES

Service Sector



Utilities + Transportation Sector



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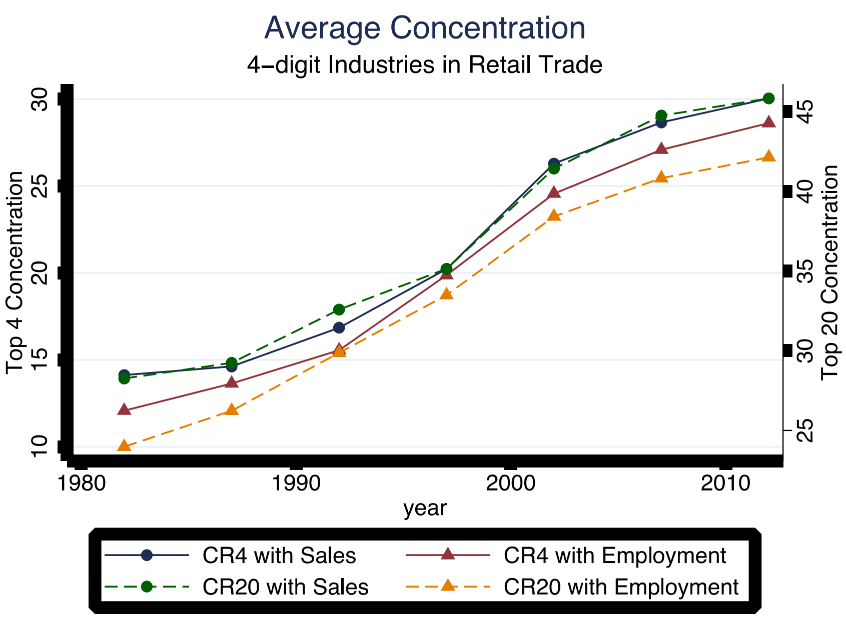
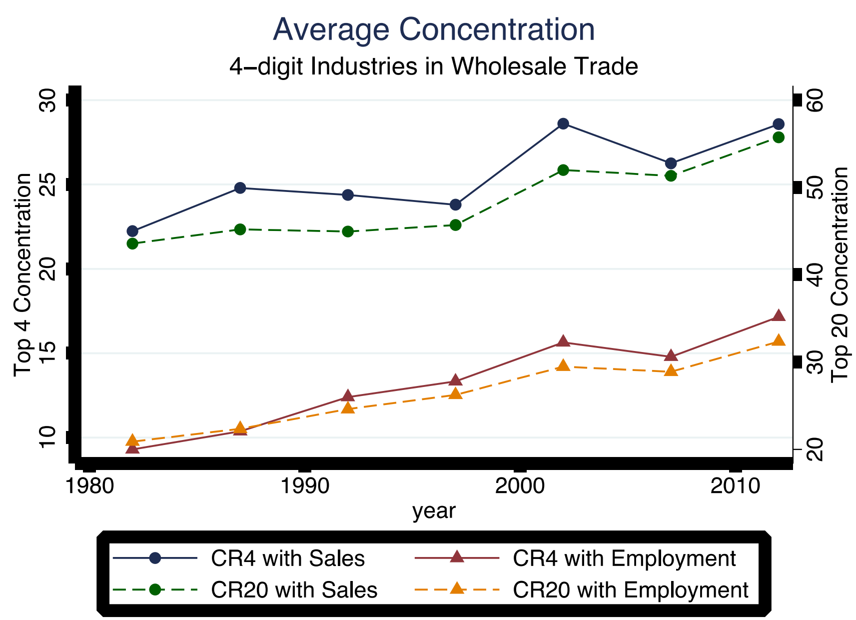
CONCENTRATION : RÉSULTATS EMPIRIQUES

Retail Trade



Wholesale Trade



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CONCENTRATION : RÉSULTATS EMPIRIQUES

- Au total, on observe :

1. Une nette tendance à la hausse de la concentration des secteurs au cours du temps
2. Cette tendance est beaucoup plus forte lorsqu'on mesure la concentration des ventes plutôt que l'emploi.

- Le second point suggère que les entreprises peuvent atteindre des parts de marché importantes avec relativement peu d’employés. On appelle parfois ce phénomène de *scale without mass.*

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INTRODUCTION

Augmentation de la part du capital, diminution de la part du travail (de 65% à 58%) :

- En partie liée au secteur immobilier, plus intensif en capital, dont la taille relative s’est accrue, et dont la part du capital a augmenté.
- Rente foncière et immobilière, facteur inélastique, selon la théorie exacte de Ricardo.

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INTRODUCTION

- Contre les *Kaldor facts*, baisse de la part du travail dans la valeur ajoutée dans de nombreux pays

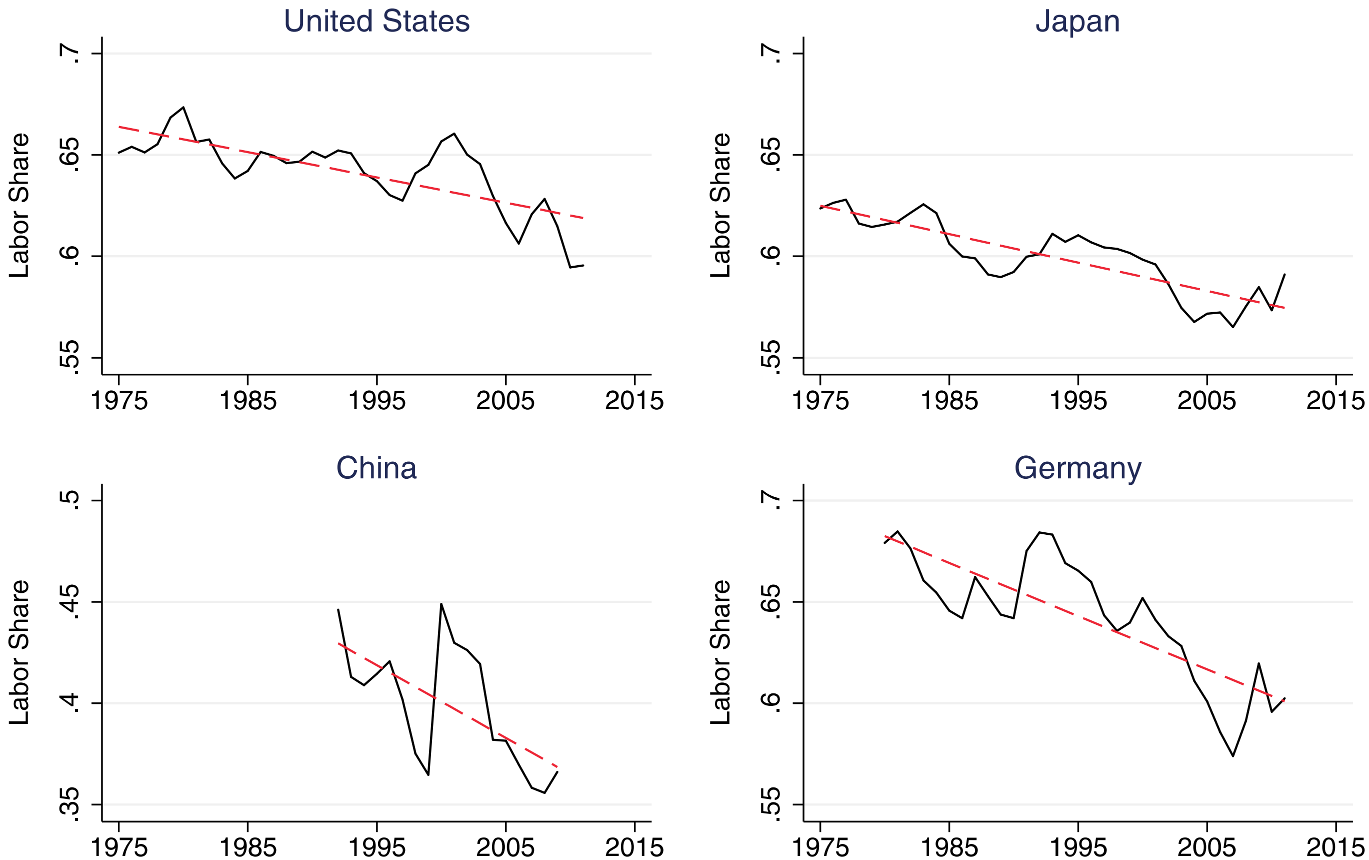

FIGURE II

Declining Labor Share for the Largest Countries

Source : Karabarbounis and Neiman, 2014

COLLÈGE DE FRANCE 1530

INTRODUCTION

- Le taux de rendement sur le capital est stable autour de 8% alors que les taux d’intérêt réels sans risque ont baissé de 5% à -2%. Rentes ou primes de risque?
- Augmentation de la dispersion des taux de rendement du capital. Par rapport au médian, le premier décile (secteur des technologies de l’information) a augmenté d’un facteur de 2 à 5. Rentes pour les firmes « superstar » ?

INTRODUCTION

- Accroissement des inégalités de salaires entre travailleurs entre les entreprises, plutôt qu’au sein des entreprises.
- Rentes et leur partage dans les firmes « superstar » ?

DÉCOMPOSITION INTRA VS. INTER

- Bloom et al (2016) utilisent 3 approches pour étudier les effets intra-firmes et inter-firmes dans la hausse des inégalités salariales :
    1. Décomposition de la variance
    2. Évolution des revenus salariaux du top x%
    3. Évolution de la distribution

- Nous allons voir que, dans les trois cas, la majorité de la hausse des inégalités salariales provient d'un effet inter-firmes

DÉCOMPOSITION INTRA VS. INTER

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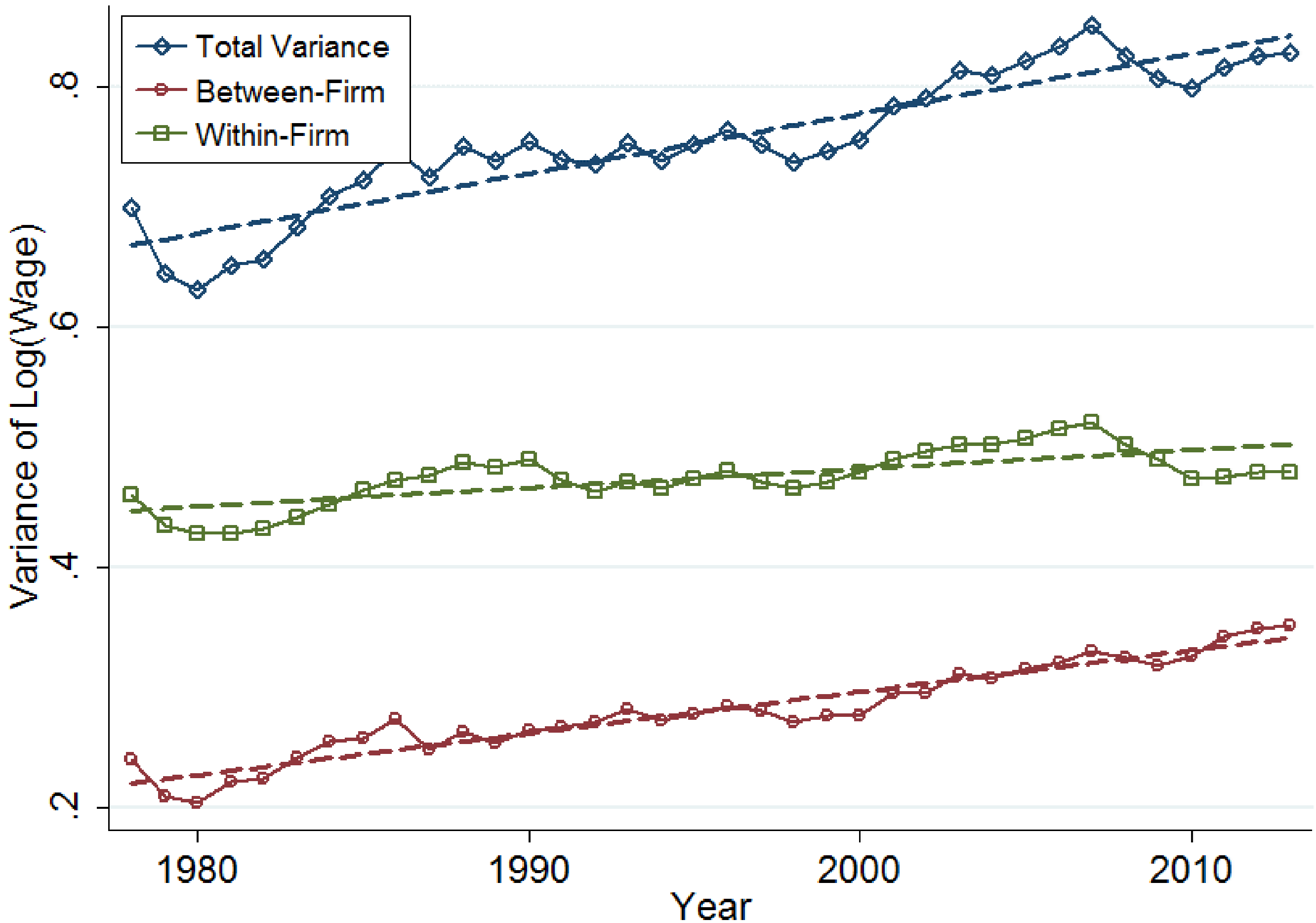
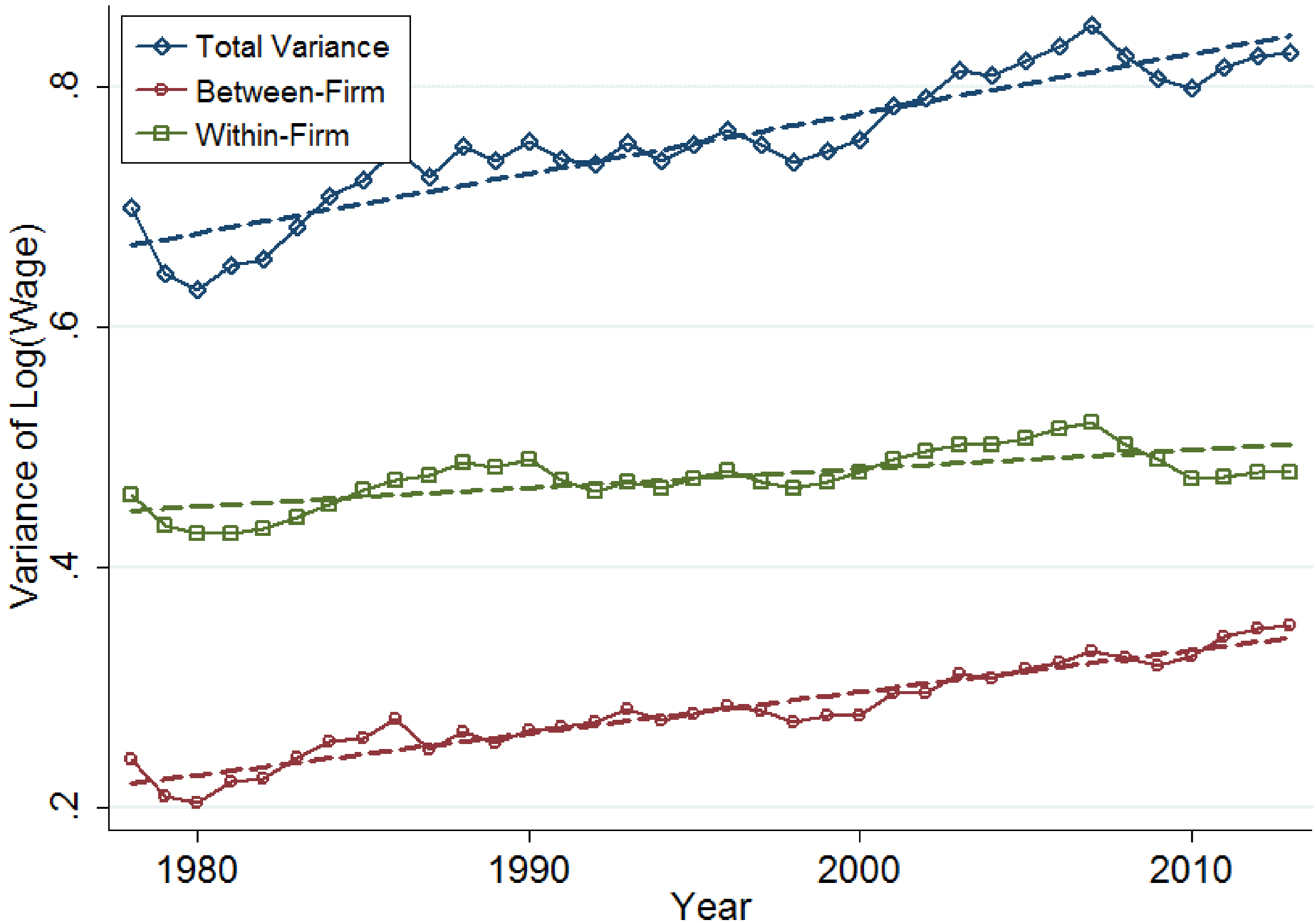
DÉCOMPOSITION DE LA VARIANCE



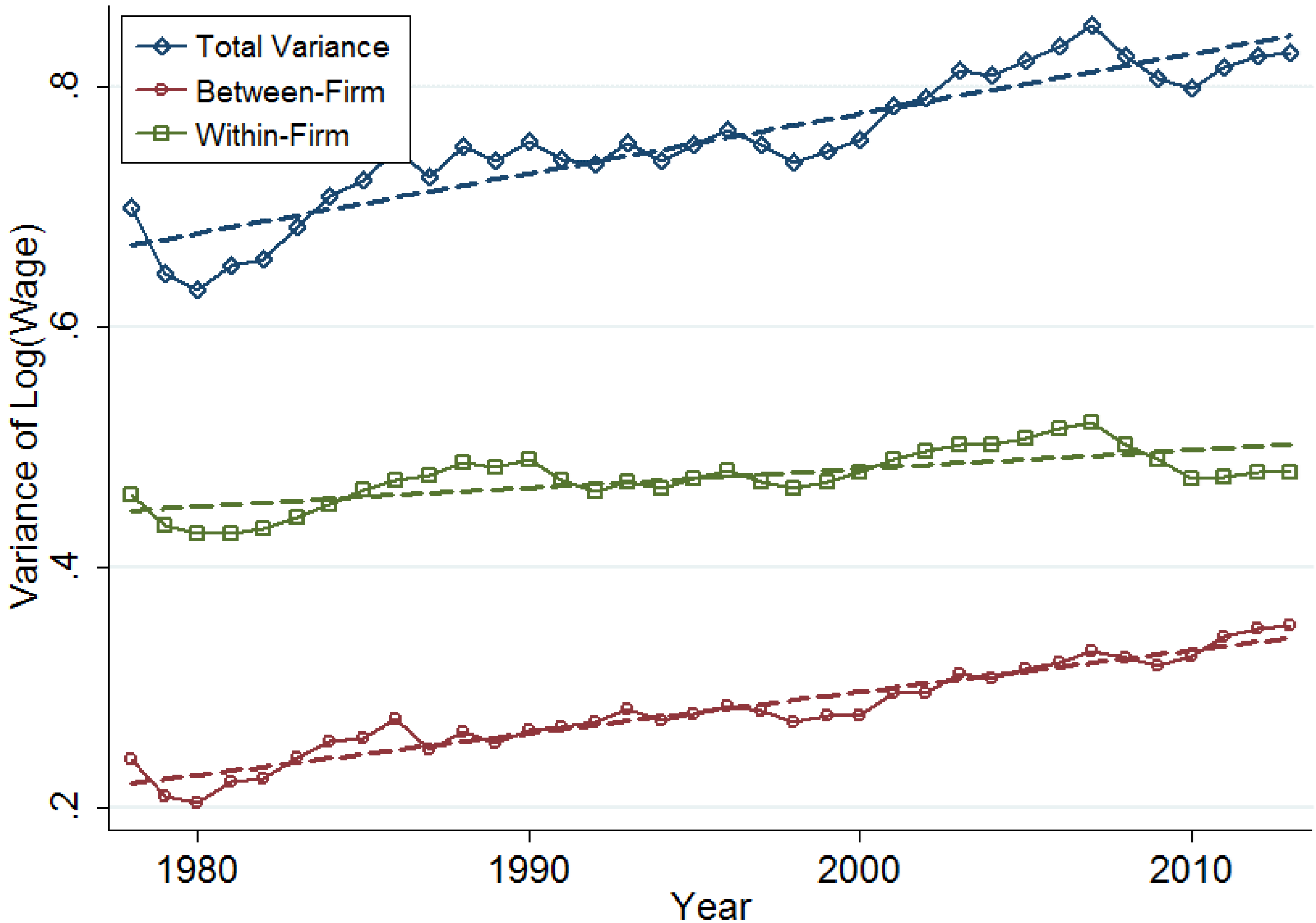
- Même si la majorité de la variance provient de différences intra-firmes (différences de rémunérations entre le plus haut/bas salaire et la moyenne) …

DÉCOMPOSITION DE LA VARIANCE



- … L'évolution de la variance (+0.19) est majoritairement due aux différences inter-firmes (+0.13) qu'aux différences intra-firmes (+0,06)

DÉCOMPOSITION DE LA VARIANCE



- Au total, en suivant cette première décomposition, l'effet inter-firmes *(between)* expliquerait 69% de la hausse des inégalités salariales

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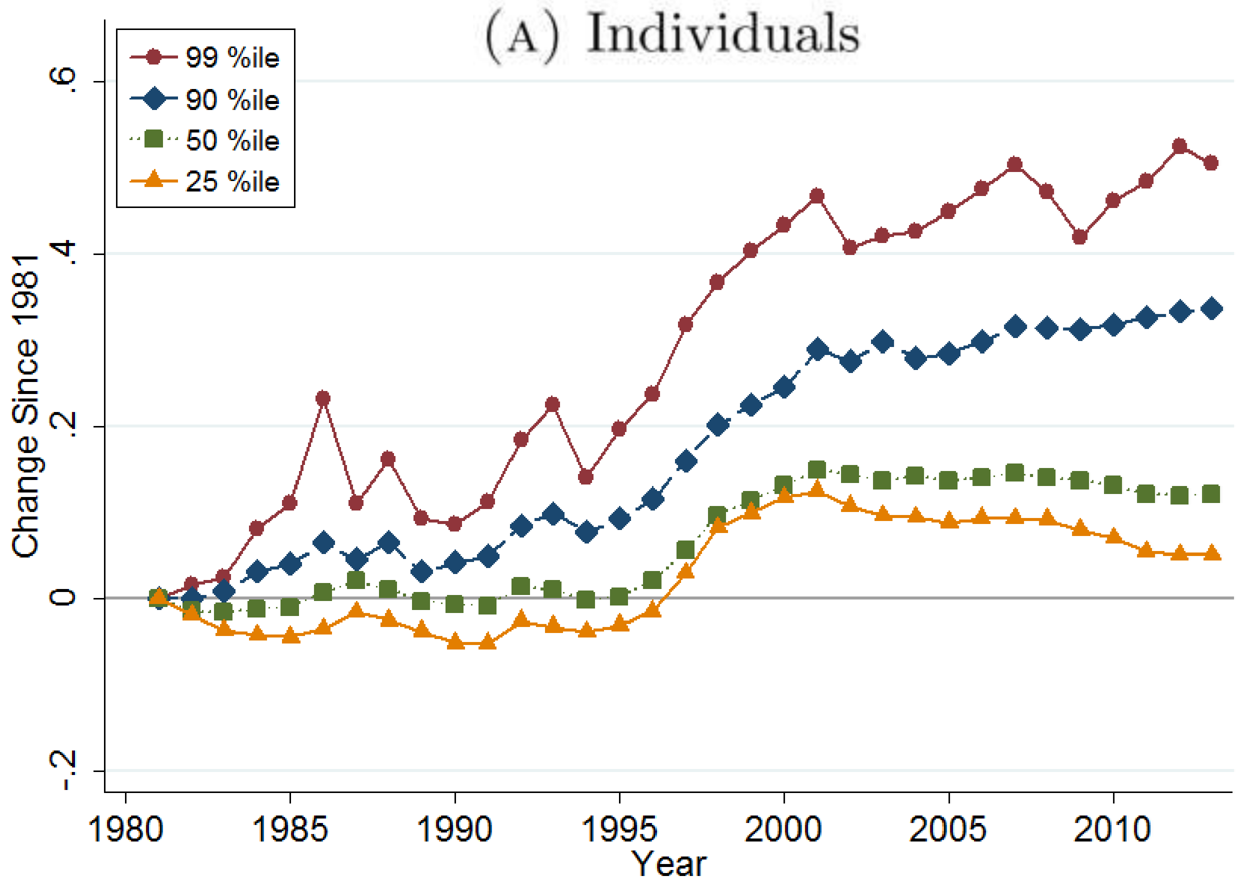
DÉCOMPOSITION INTRA VS. INTER

- Bloom et al (2016) utilisent 3 approches pour étudier les effets intra-firmes et inter-firmes dans la hausse des inégalités salariales :
  1. Décomposition de la variance
  2. **Évolution des revenus salariaux du top x%**
  3. Évolution de la distribution

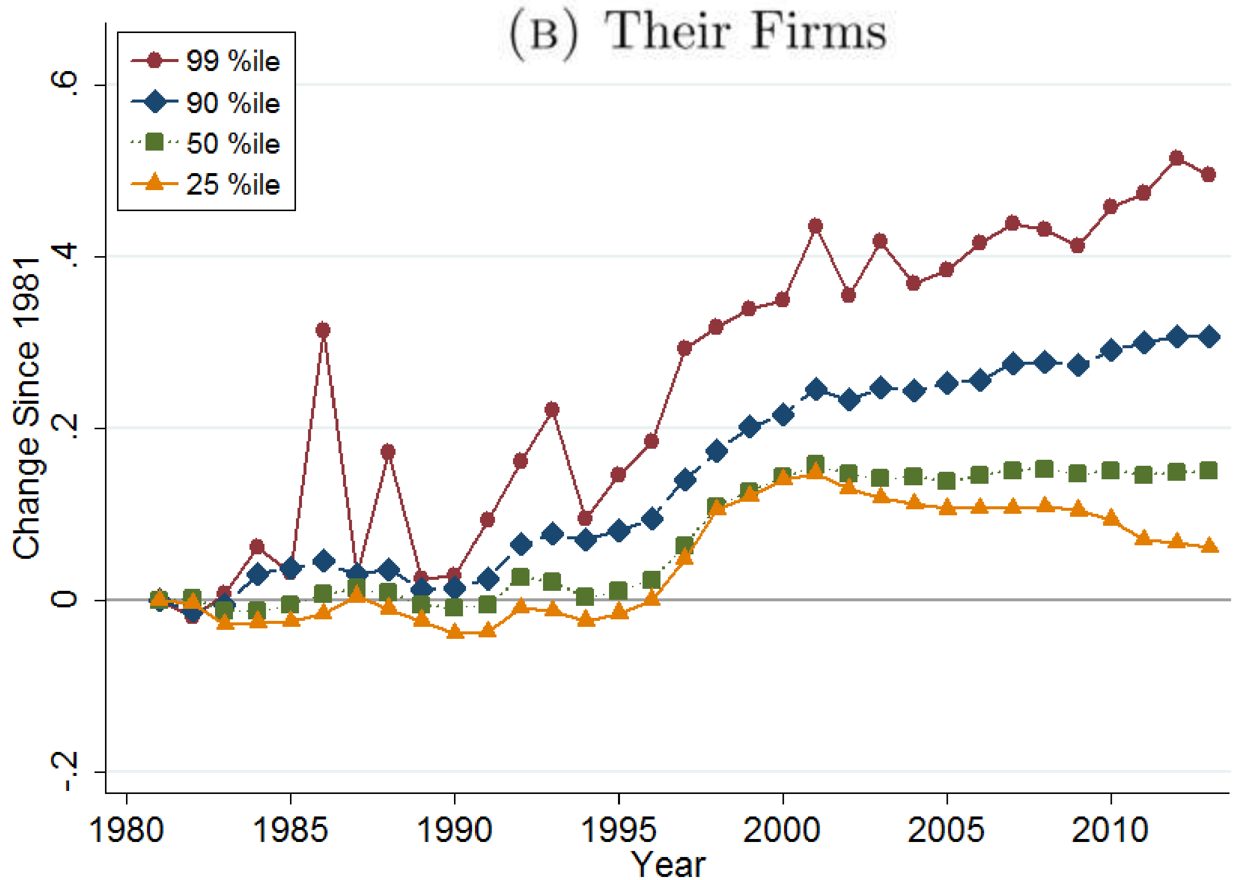
REVENUS SALARIAUX DU TOP X%



- Graphique courant de suivi des inégalités
- On observe une hausse des revenus pour tous les quantiles supérieurs, quelque soit leur définition

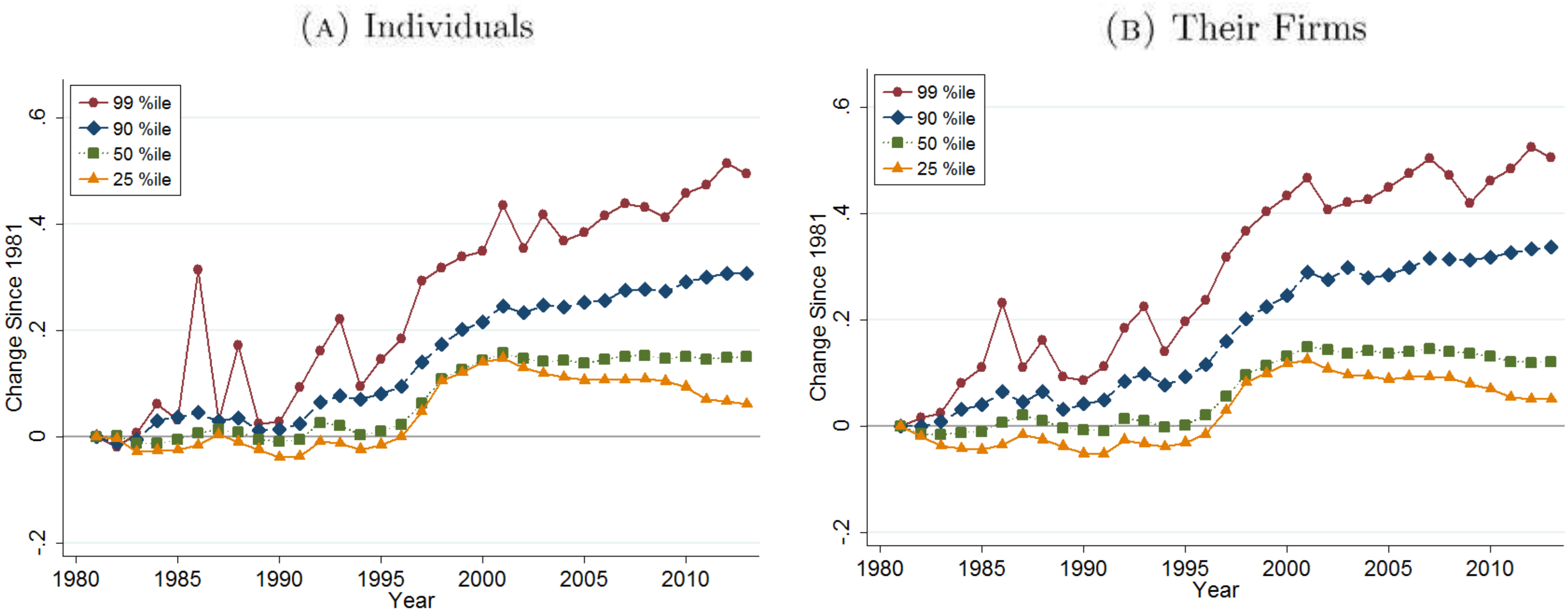
COLLÈGE DE FRANCE 1530

REVENUS SALARIAUX DU TOP X%



- On regarde l'évolution salariale moyenne des collègues des individus dans les différents top x%.
- Par exemple, la ligne rouge représente l'évolution des salaires des collègues des individus du top1%

REVENUS SALARIAUX DU TOP X%



- Les évolutions salariales des individus et de leurs collègues sont particulièrement similaires !
- On retrouve donc graphiquement l'intuition de la décomposition de la variance : l'**effet inter-firme prédomine**

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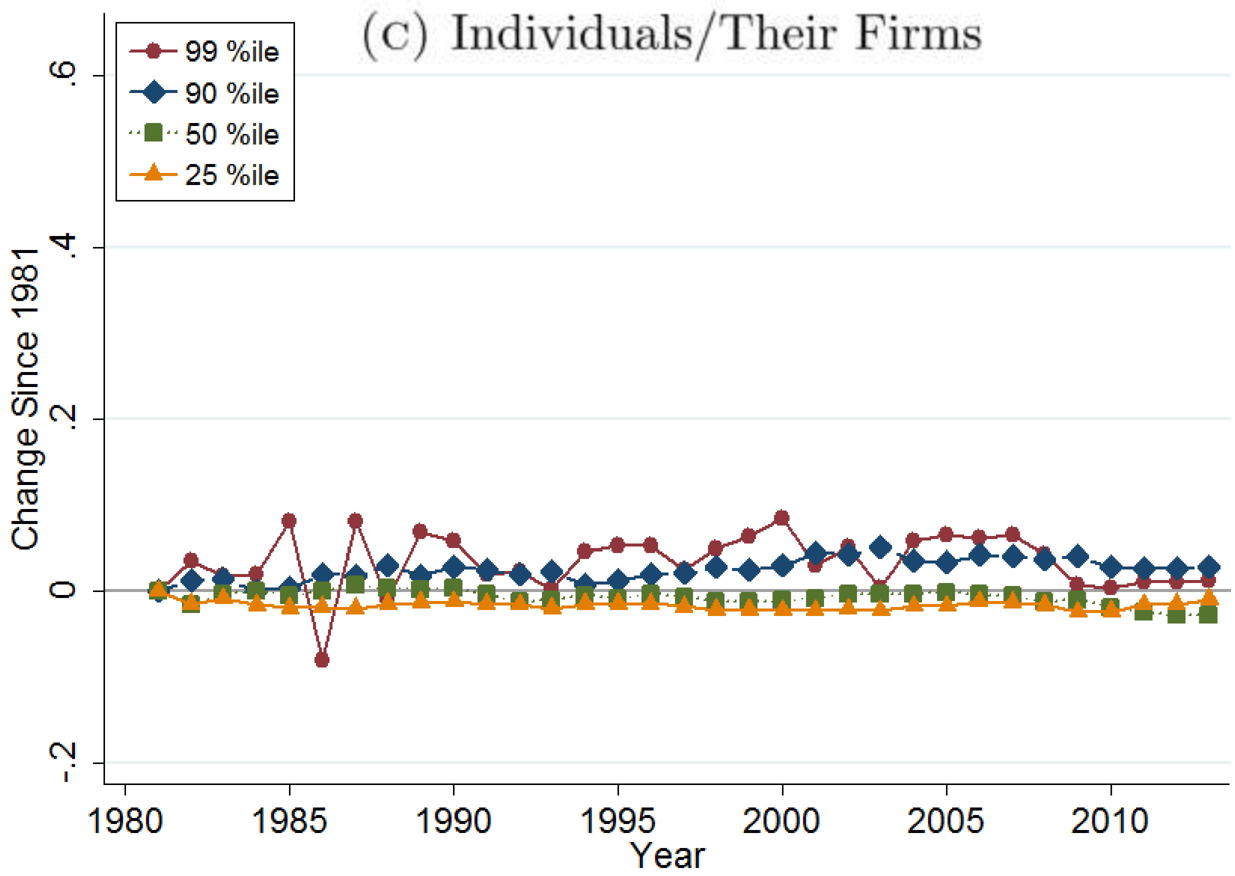
REVENUS SALARIAUX DU TOP X%



- Ce dernier graphe montre le rapport entre les deux courbes précédentes, c'est-à-dire l'évolution salariale d'individus du top x% par rapport à celle de leurs collègues
- Elle est presque plate !

DÉCOMPOSITION INTRA VS. INTER

- Les auteurs utilisent 3 approches graphiques pour étudier les effets intra-firmes et inter-firmes dans la hausse des inégalités salariales :
  1. Décomposition de la variance
  2. Évolution des revenus salariaux du top x%
  3. **Évolution de la distribution**

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ÉVOLUTION DE LA DISTRIBUTION

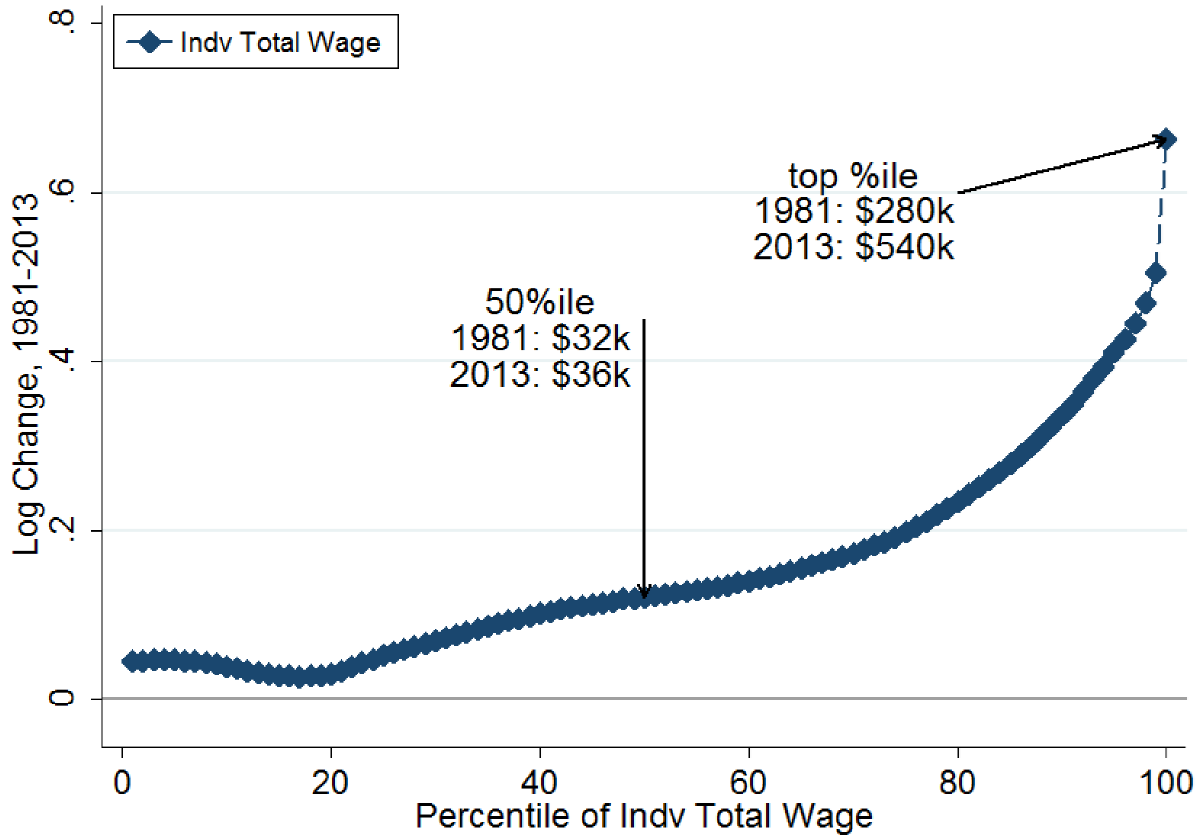
1. Evolution de tous les centiles en termes réels entre 1981 et 2013 (évolution générale des inégalités salariales)

- Les auteurs découpent la distribution de revenus en 1981 en centiles
- Ils calculent le revenu réel (en équivalent dollars 2013) pour chaque centile
- Ils font la même opération pour la distribution de revenus en 2013, puis calculent l'évolution en termes réels pour chaque centile :

$$P_{2013}x - P_{1981}x$$

COLLÈGE DE FRANCE 1530

ÉVOLUTION DE LA DISTRIBUTION



- De nouveau, on observe une hausse des inégalités salariales, car les centiles de revenu les plus élevés ont connu une hausse plus importante en termes réels

ÉVOLUTION DE LA DISTRIBUTION

2. Evolution inter-firmes :

- Les auteurs découpent la distribution de revenus en 1981 en centiles, comme dans le cas précédent
- Ils calculent la moyenne des évolutions salariales dans les entreprises des individus de chaque centile
- Ils font la même opération pour la distribution de revenus en 2013, puis calculent l'évolution
- Par exemple, en 1981, les personnes du 50ème centile en termes de revenus individuels travaillaient dans des entreprises dont le salaire moyen réel était de 29 900 $. En 2013, les personnes du 50ème centile étaient employées dans des entreprises dont le salaire moyen réel était de 34 700 $. D'où une hausse de 16% pour ce centile.

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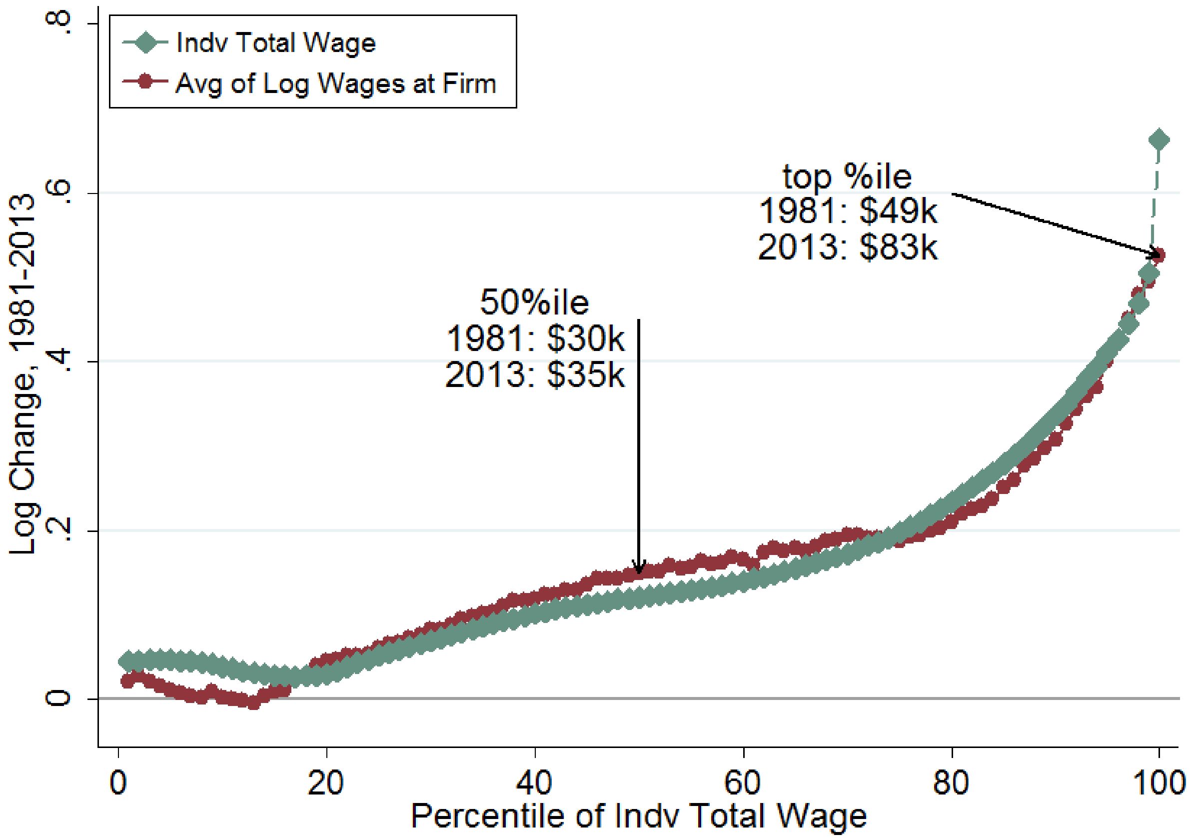
ÉVOLUTION DE LA DISTRIBUTION



- Cette courbe a une allure quasiment identique à la précédente, et **va dans le sens d'une inégalité inter-firmes.**

CONCLUSION

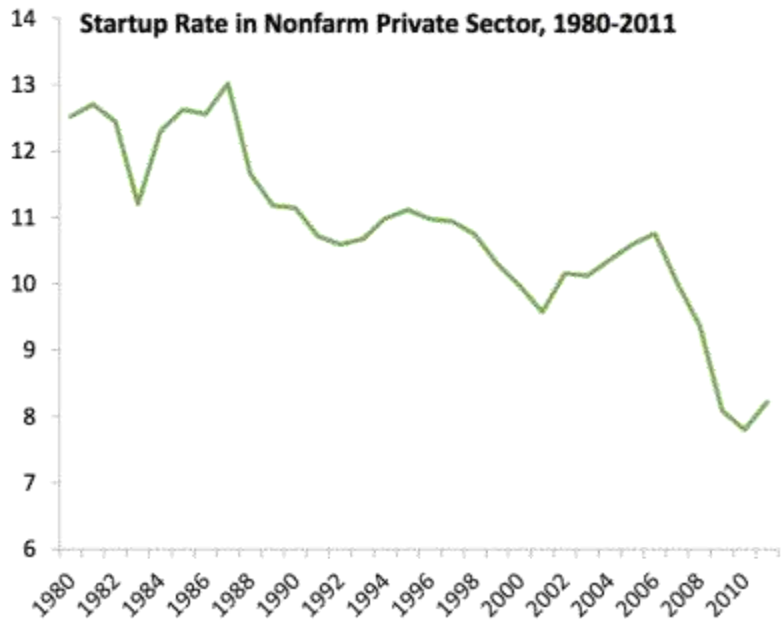
- Les trois types de décompositions des inégalités vont dans le même sens :

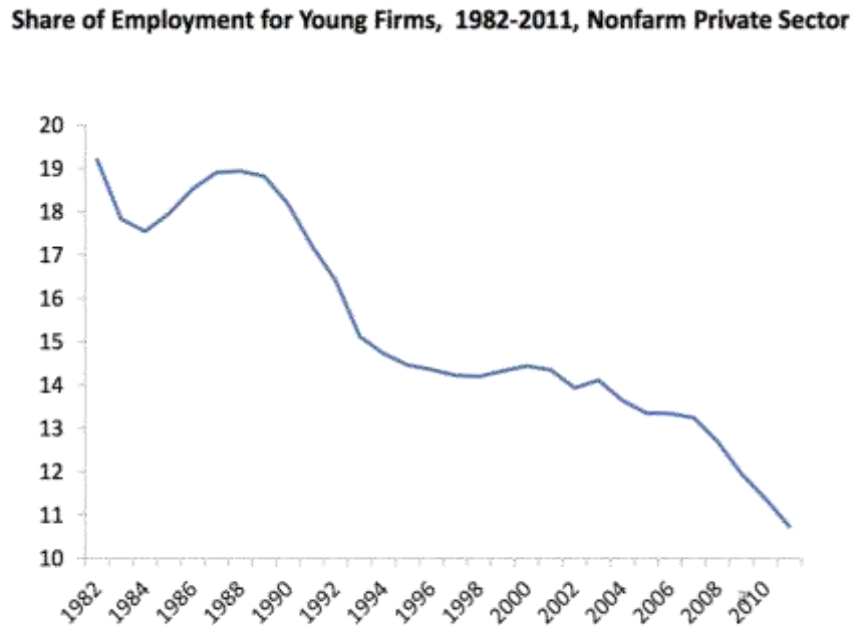
- 2/3 de la hausse des inégalités salariales est lié à un effet inter-firmes (outsourcing ?)
- 1/3 de la hausse est lié à un effet intra-firme, en particulier pour les très grands groupes

DYNAMISME EN DECLIN?

- Ralentissement du processus de création destructrice?
- Le pourcentage des emplois présents dans les entreprises de moins de 5 ans a décliné de 20% à 10%. Le taux d'entrée des nouvelles entreprises a décliné de 14% à 8%.

LA BAISSE DE L'ACTIVITÉ ENTREPRENEURIALE





- Le facteur principal semble être la baisse de la part des start-ups dans l'économie
- En effet, on a vu que la création et la destruction brutes d'emplois étaient toutes les deux très importantes chez les start-ups, la baisse de leur part dans l'économie réduit donc le dynamisme

QUESTIONS

- S’agit-il de rentes dues a des barrières a l’entrée ou bien a des rentes dues a l’innovation?
- Contribution de ces rentes au déclin de la croissance de la productivité ? Relation entre compétition et innovation/croissance est complexe.

QUESTIONS

Difficile de distinguer entre innovation et barrières a l'entrée comme sources de rentes?

- La concentration accrue peut être le résultat de davantage de concurrence (Jan Boone),
- Les rentes de situation tendent a s adosser aux rentes d'innovation (Hémous)
- Les inégalités de salaires inter-firmes sont en partie liées a l'innovation (Aghion et al, 2017)
- La "net entry of plants" ne s'est pas ralentie, et les brevets non plus!

COLLÈGE
DE FRANCE
1530

CONCENTRATION COMME RESULTANT DE LA CONCURRENCE

- Imaginons deux firmes qui se font la concurrence dans une ville cercle, les consommateurs étant uniformément repartis sur le cercle
- Une augmentation de la concurrence correspond a une baisse des cout de transport sur la ligne circulaire

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CONCENTRATION COMME RESULTANT DE LA CONCURRENCE

- Supposons également qu’une des deux firmes est plus efficace que l’autre, au sens ou ses couts unitaires de production sont inferieurs a ceux de sa concurrente
- Davantage de concurrence va alors résulter dans un degrée de concentration “à l’équilibre” plus grand et en faveur de la firme la plus efficace.

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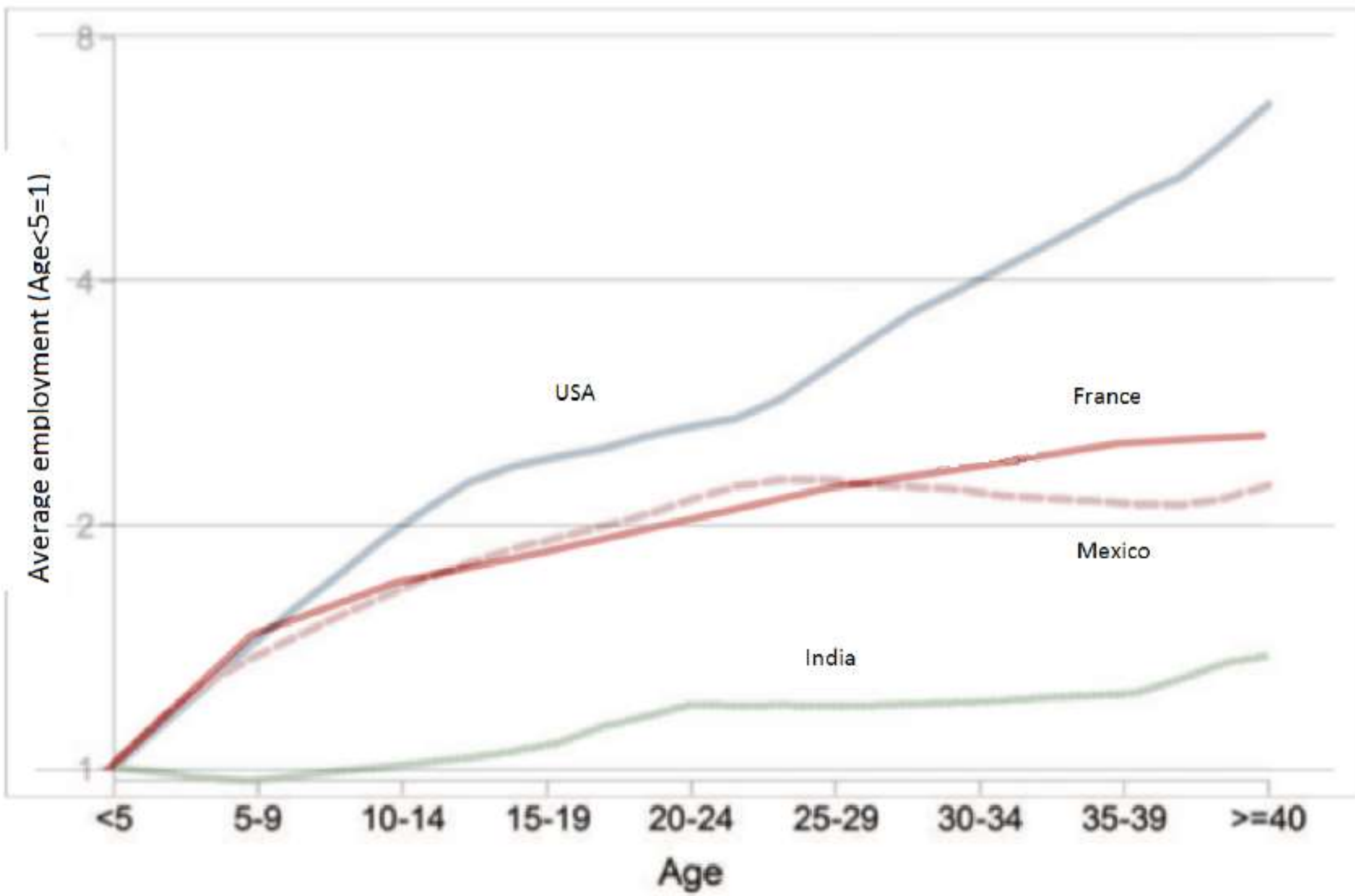
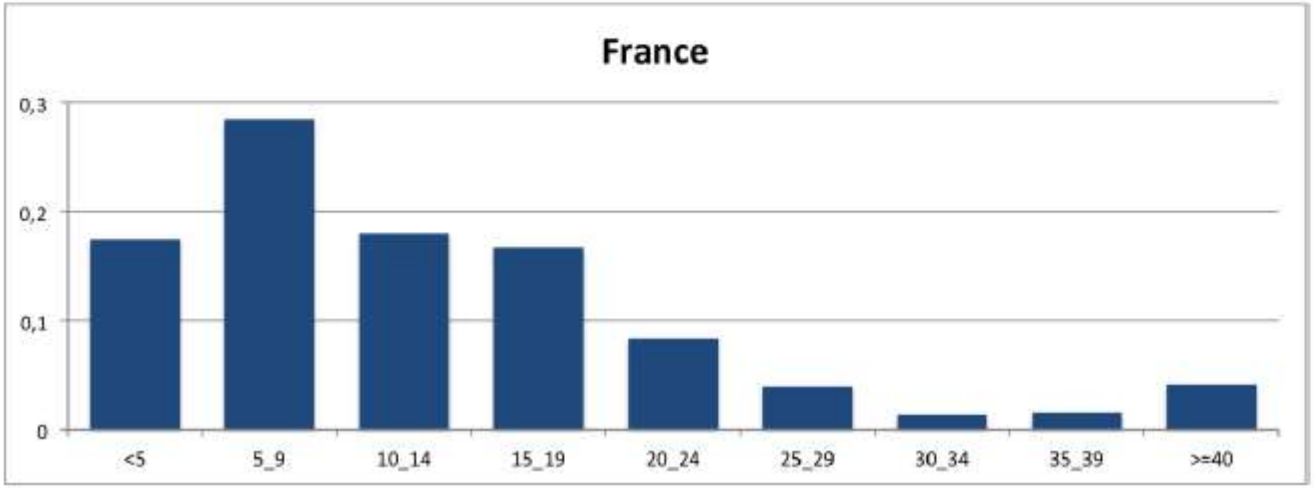
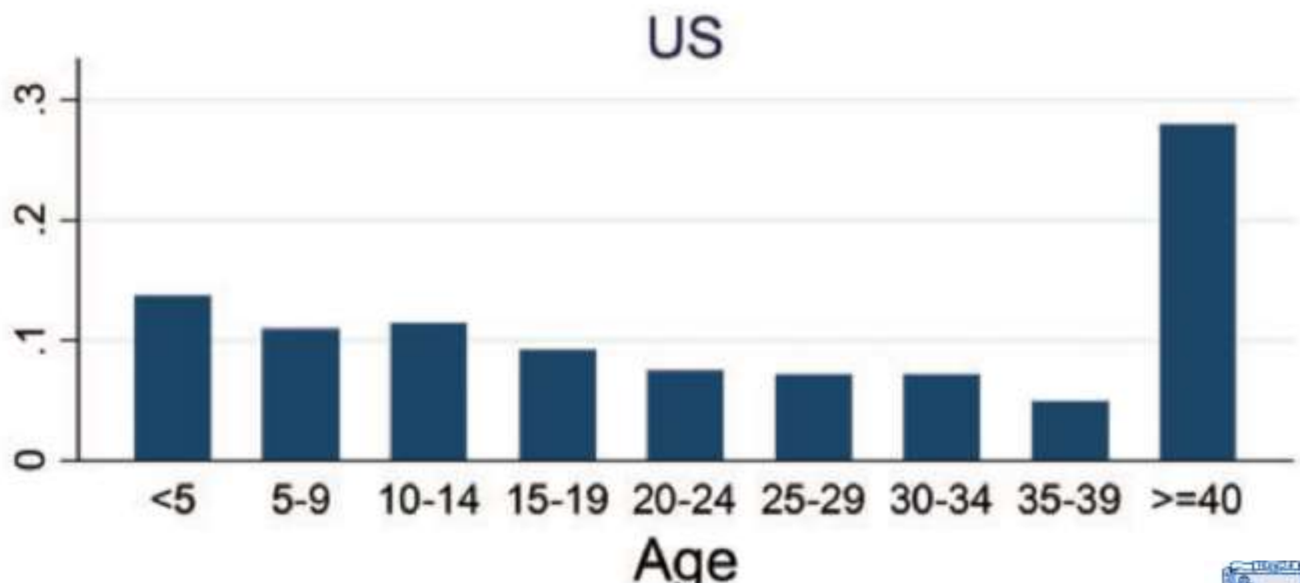


Average employment (Age<5=1)
8
4
2
1
USA
France
Mexico
India
<5
5-9
10-14
15-19
20-24
25-29
30-34
35-39
>=40
Age





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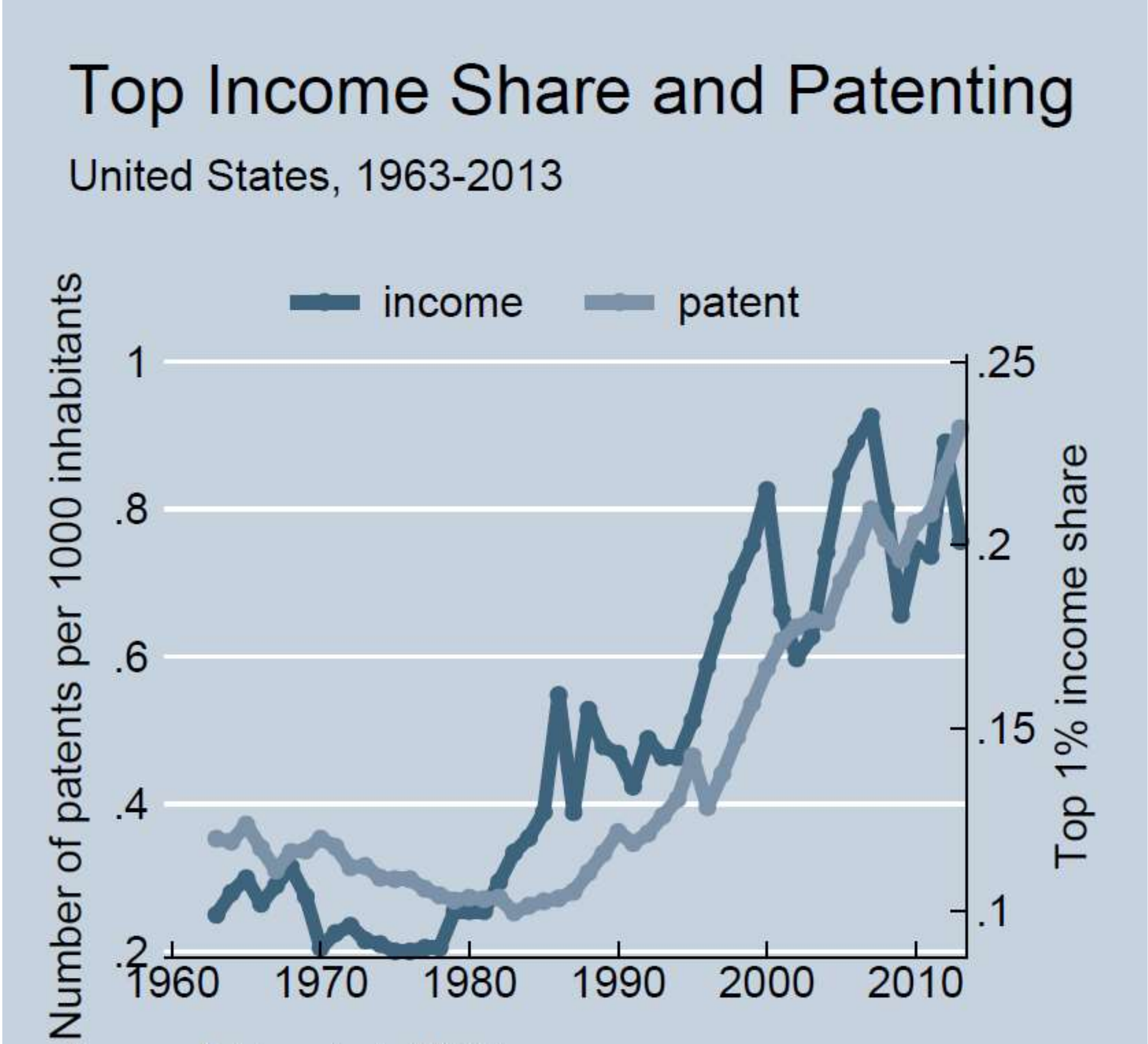
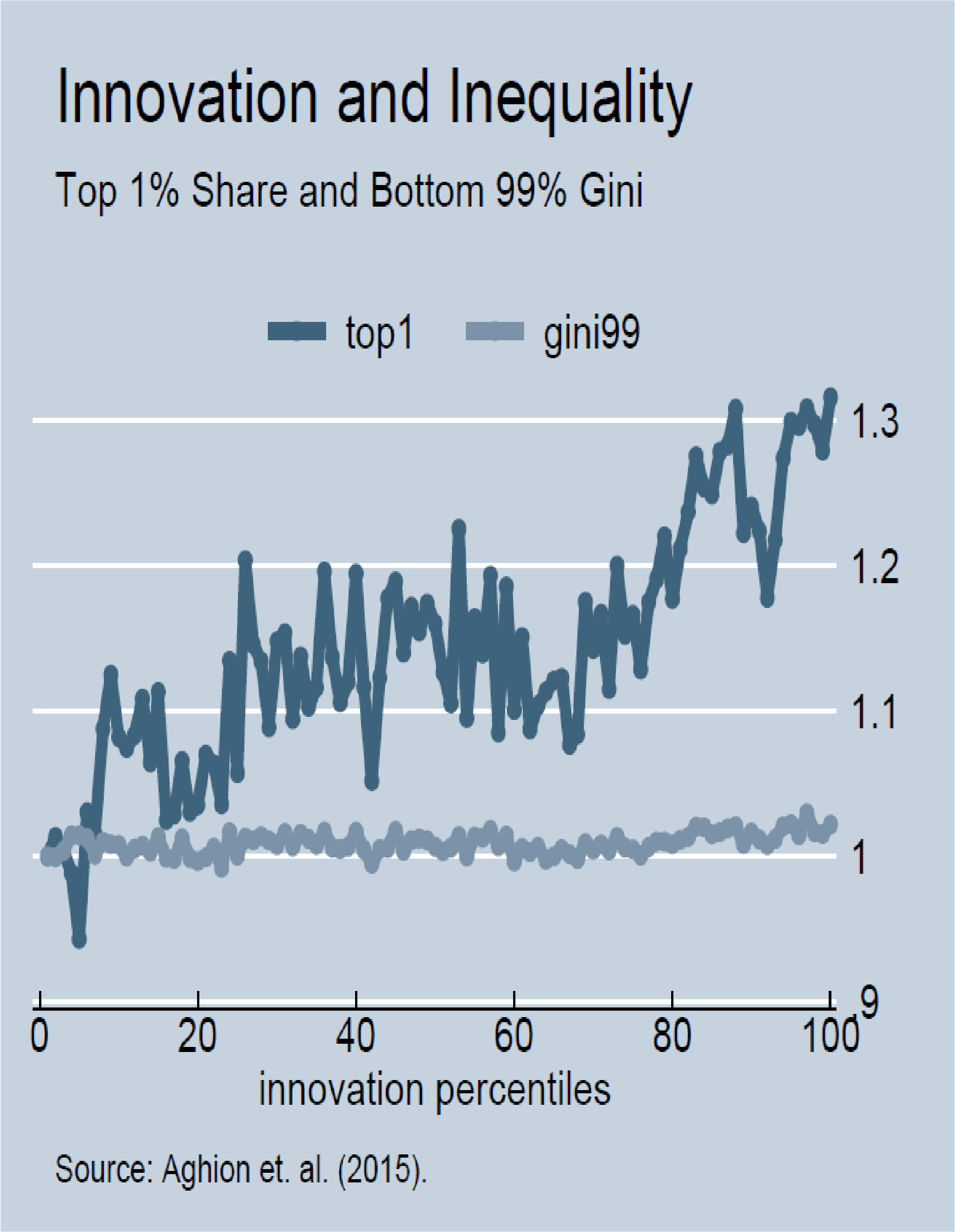
RENTES DE SITUATION OU D'INNOVATION?

. Aghion et al, 2017;

. Hemous et al, 2017.



Source: Aghion et. al. (2015).


Innovation and Inequality
Top 1% Share and Bottom 99% Gini
top1
gini99
1.3
1.2
1.1
1
.9
0
20
40
60
80
100
innovation percentiles
Source: Aghion et. al. (2015).

RENTES “ADOSSEES”

Our hypothesis: inequality *spills over* across occupations

This paper: propose and test hypothesis that

- level of inequality *spills over* across occupations
  - Growing inequality in A (CEOs) *can* spill over into B (doctors)
  - Inequality in A's inc $\rightarrow$ inequality in WTP for B's services
- Inequality in A *spills over* into occ B (doctors) if:
  - occ B services the general population
  - occ B produces a "non-divisible" good of varying quality
    - (two decent doctors $\neq$ one good doctor)
    - (quality $\neq$ medical quality or skill)

Empirical Test

- Theory leads to empirical prediction of:

$$\log\left(\alpha_{t,s,o}^{-1}\right) = \beta_0 + \beta_1 \log\left(\alpha_{t,s,-o}^{-1}\right) + \lambda_t + \mu_s + \textit{controls}_{t,s} + \epsilon_{t,s,o},$$

  - where 'o' is occupation of interest (Doctors), '$-o$' refers to all other occupations. λ_t is a year fixed effect and μ_s is a LMA (or state) fixed effect.
- α: shape parameter of Pareto distribution—our measure of income inequality

OLS:

$$\log\left(\alpha_{t,s,o}^{-1}\right) = \beta_0 + \beta_1 \log\left(\alpha_{t,s,-o}^{-1}\right) + \lambda_t + \mu_s + \gamma X_{t,s} + \epsilon_{t,s,o}$$

	$\log(1/\alpha(o))$	$\log(1/\alpha(o))$
$\log(1/\alpha(-o))$	0.34***	0.32**
	[0.06, 0.50]	[0.05, 0.49]
Log of Population		-0.02
		[-0.13, 0.08]
Log of Income		0.12
		[-0.04, 0.24]
1990	0.09***	0.02
	[0.07, 0.14]	[-0.06, 0.15]
2000	0.10***	-0.01
	[0.07, 0.17]	[-0.13, 0.19]
2014	0.21***	0.06
	[0.17, 0.28]	[-0.09, 0.31]
LMA FE	Yes	Yes
R^2 (ex. LMA FE)	0.21	0.21
Observations	1,012	1,012

IV results: Physicians

	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	1st Stage	2SLS	2SLS
	$\log(1/\alpha(o))$	$\log(1/\alpha(o))$	$\log(1/\alpha(-o))$	$\log(1/\alpha(o))$	$\log(1/\alpha(o))$
$\log(1/\alpha(-o))$	0.34***	0.32***		0.97**	1.16***
	[0.16, 0.51]	[0.12, 0.52]		[0.16, 1.41]	[0.20, 1.79]
log(I)			1.02***		
			[1.00, 1.04]		
logpop		-0.02	-0.06***		0.08
		[-0.08, 0.07]	[-0.06,-0.06]		[-0.03, 0.21]
log(income)		0.12	0.07***		0.07
		[-0.02, 0.23]	[0.07, 0.07]		[-0.06, 0.22]
1990	0.09***	0.02	-0.02***	0.02	0.11
	[0.06, 0.13]	[-0.06, 0.09]	[-0.02,-0.02]	[-0.06, 0.11]	[-0.19, 0.31]
2000	0.10***	-0.01	0.08***	-0.04	0.05
	[0.06, 0.16]	[-0.15, 0.11]	[0.08, 0.08]	[-0.15, 0.13]	[-0.12, 0.16]
2014	0.21***	0.06	0.04***	0.05	-0.06***
	[0.15, 0.26]	[-0.13, 0.21]	[0.03, 0.04]	[-0.06, 0.24]	[-0.11,-0.02]
LMA FE	Yes	Yes	Yes	Yes	Yes
R2 (ex. LMA FE)	0.21	0.21	0.83	.	.
Observations	1,012	1,012	1,012	1,012	1,012

Bootstrapped standard errors based on 300 draws, stratified at the occupation/year/labor market level. 95 pct confidence interval in square parentheses. Income is average wage income for those with positive income o refers to occupation of interest * $p <= 0.10$, ** $p <= 0.05$, *** $p <= 0.01$

Real Estate Agents

Table 7: IV Regressions for Real Estate Agents (top 20 per cent)

	(1) OLS $\log(1/\alpha(o))$	(2) OLS $\log(1/\alpha(o))$	(3) 1st Stage $\log(1/\alpha(-o))$	(4) 2SLS $\log(1/\alpha(o))$	(5) 2SLS $\log(1/\alpha(o))$
$\log(1/\alpha(-o))$	0.17*	0.17*		1.02**	1.32**
	[-0.03, 0.30]	[-0.03, 0.30]		[0.20, 2.09]	[0.29, 2.56]
Instrument			0.64***		
			[0.51, 0.76]		
Log of Population		0.05*	-0.04***		0.11***
		[-0.00, 0.10]	[-0.05,-0.03]		[0.04, 0.20]
Log of Income		0.23***	0.03**		0.19**
		[0.13, 0.33]	[0.00, 0.05]		[0.08, 0.31]
1990	0.01	-0.14***	0.03***	-0.09	0.57***
	[-0.01, 0.04]	[-0.21,-0.08]	[0.01, 0.05]	[-0.21, 0.01]	[0.34, 0.90]
2000	0.06***	-0.20***	0.18***	-0.13	0.31***
	[0.01, 0.10]	[-0.30,-0.10]	[0.15, 0.20]	[-0.38, 0.04]	[0.19, 0.50]
2014	0.01	-0.30***	0.17***	-0.20**	0.14***
	[-0.03, 0.06]	[-0.43,-0.19]	[0.14, 0.20]	[-0.48,-0.01]	[0.10, 0.19]
LMA FE	Yes	Yes	Yes	Yes	Yes
R^2(ex. LMA FE)	0.05	0.05	0.82	.	.
Observations	1,448	1,448	1,448	1,448	1,448

Occupations

- For which occupations do we find an effect?

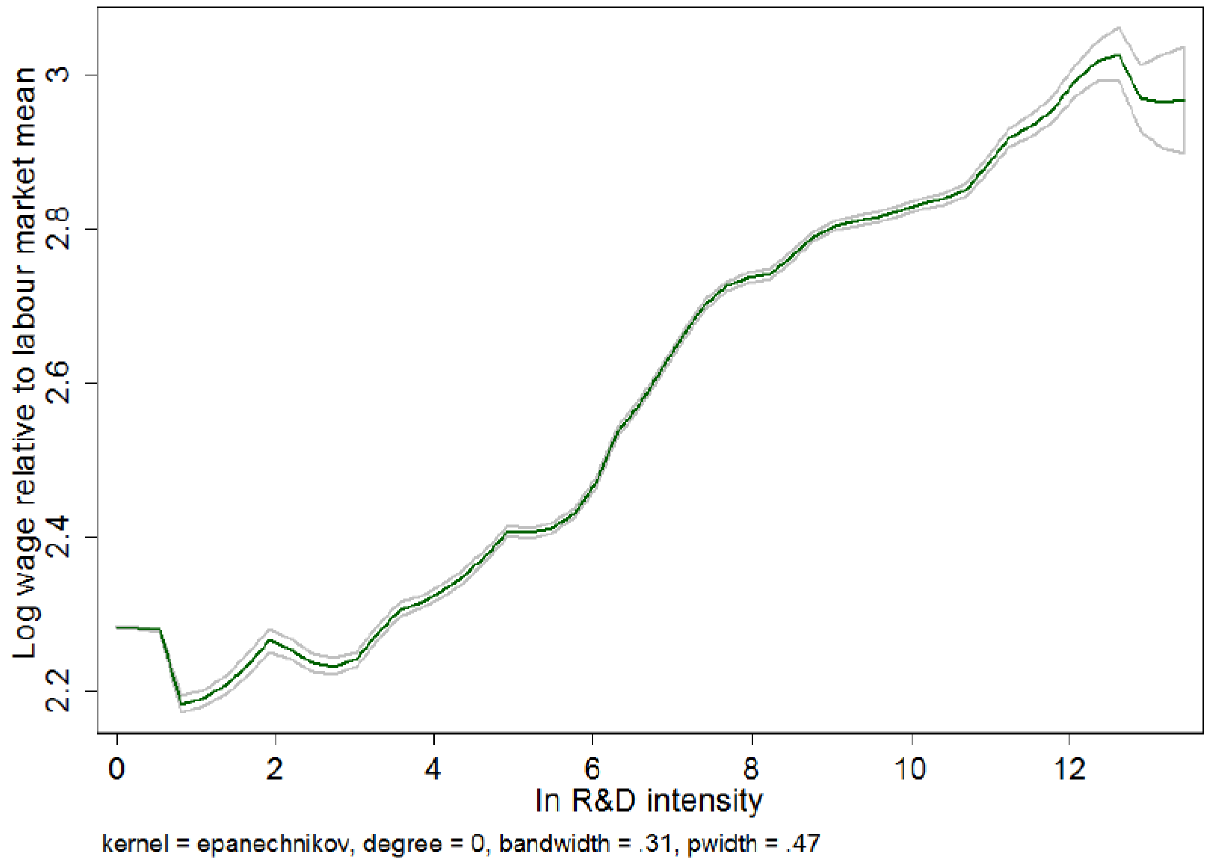
Occupation	coefficient	Share explained
Physicians and Surgeons	1.16*** [0.2,1.79]	100 pct
Dentists	2.77* [-0.19,5.20]	223 pct
Real Estate Agents	1.32** [0.29,2.56]	66 pct
Cooks (top 5 pct)	1.47** [0.1,2.74]	140 pct
Childcare workers	0.7*** [0.3,1.0]	80 pct
Financial Managers	-0.29 [-1.23,0.58]	
College Professors	-0.7 [-2.59,1.31]	
Lawyers	0.6 [-0.22,1.4]	
Primary School Teachers	0.4 [-0.4,1.2]	
Military	-0.5 [-2.22,1.5]	
CEOs	0.2 [-.82,1.32]	

INEGALITES DE SALAIRES INTER-FIRMES ET INNOVATION

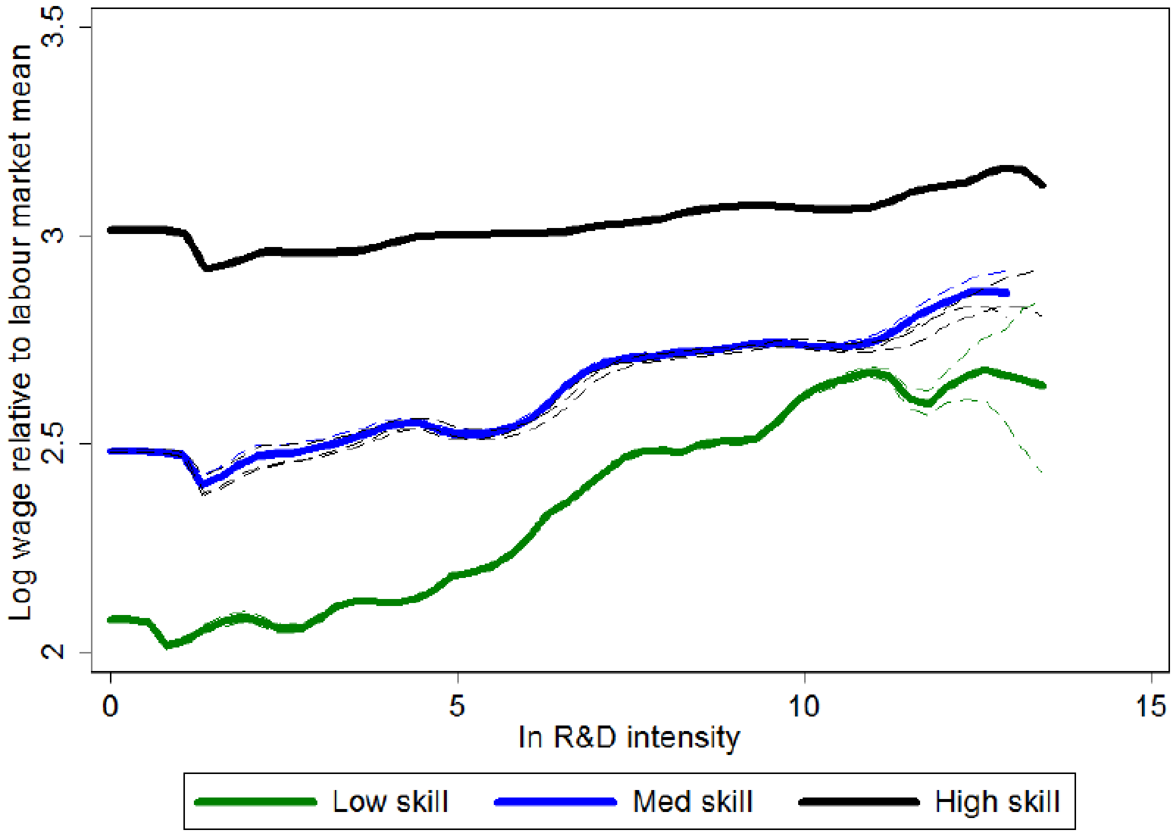
. Aghion et al (2017b)

Workers in R&D firms are paid higher wages

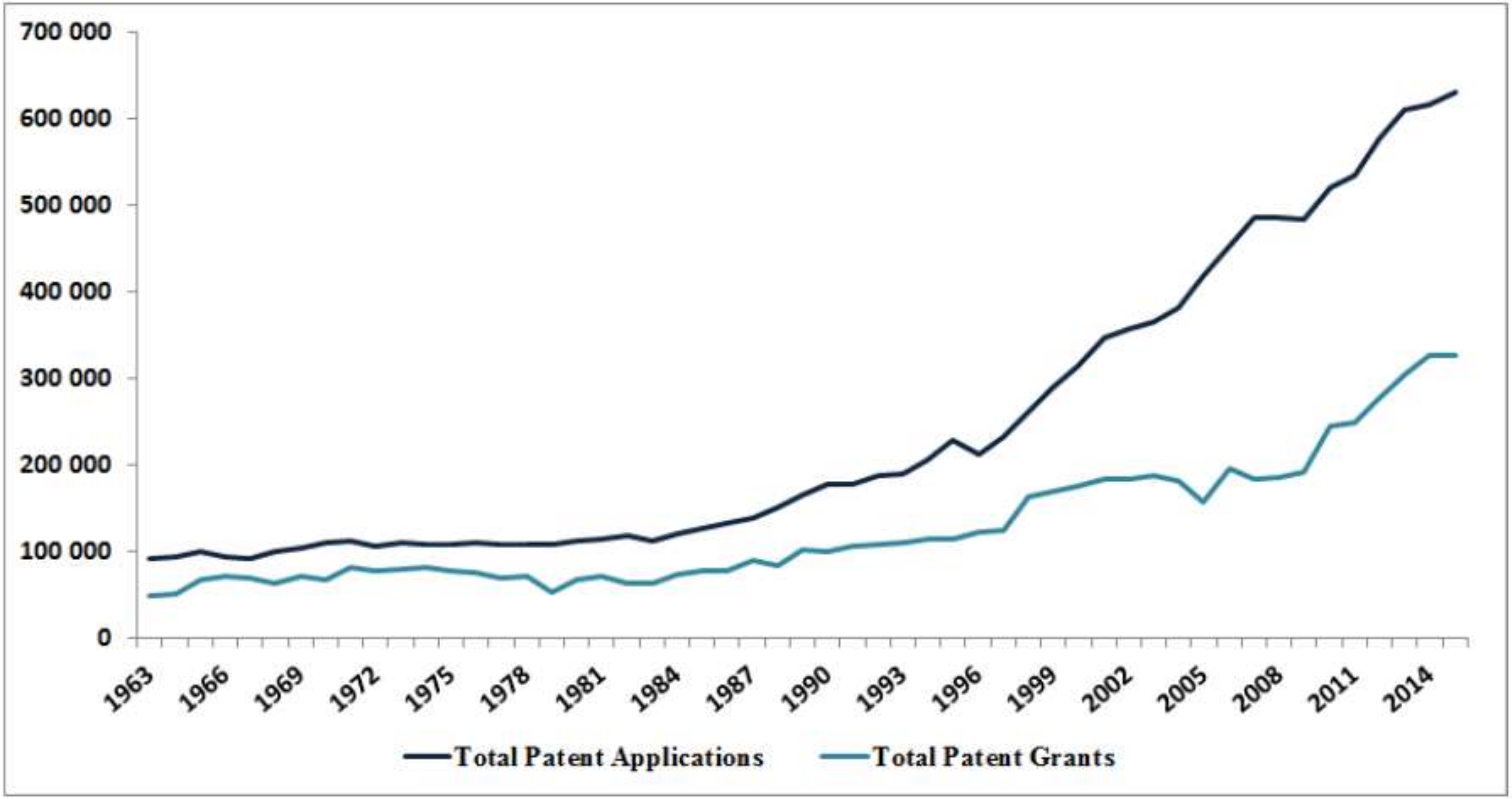
conditional on labour market mean wage



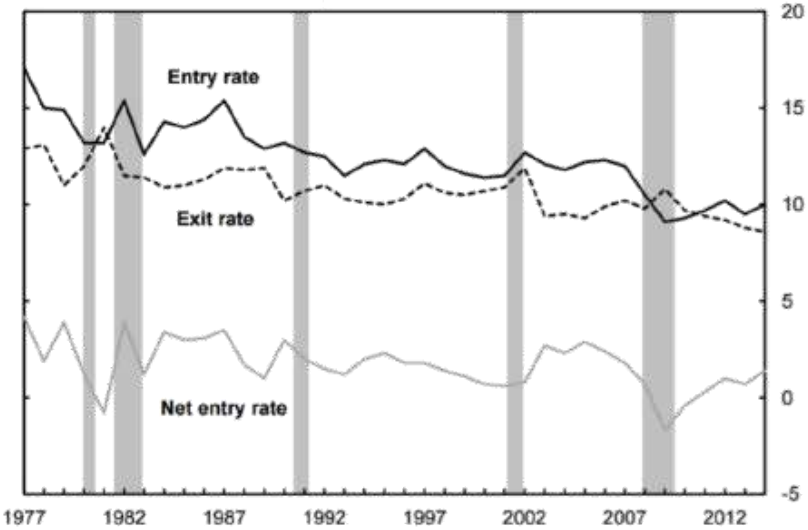
The wage premium from working in a high-R&D firm is higher for workers in low-skilled occupations



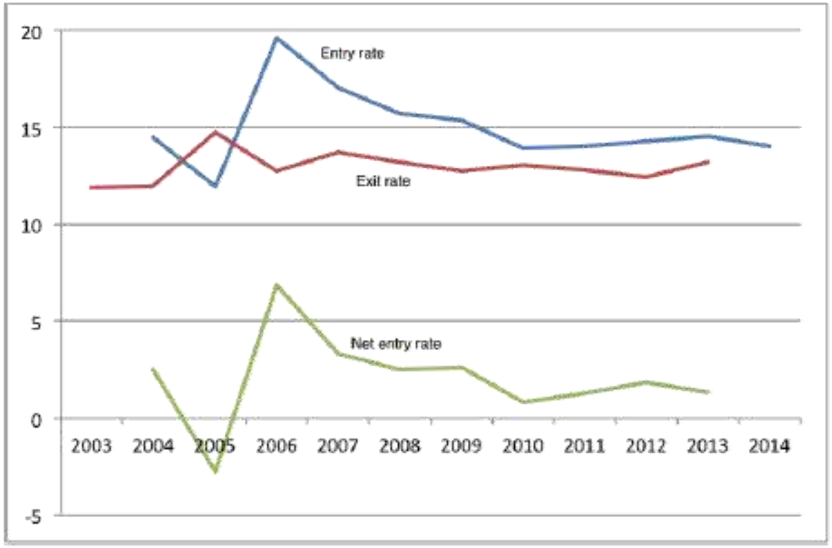
DYNAMISME EN DECLIN?



700 000
600 000
500 000
400 000
300 000
200 000
100 000
0
1963
1966
1969
1972
1975
1978
1981
1984
1987
1990
1993
1996
1999
2002
2005
2008
2011
2014
Total Patent Applications
Total Patent Grants



(a) United States



(b) France

COLLÈGE DE FRANCE 1530

Measured VS True Growth

% points per year

	Missing	Measured	"True"
1983–2013	0.64	1.87	2.51
1983–1995	0.66	1.80	2.46
1996–2005	0.55	2.68	3.23
2006–2013	0.74	0.98	1.72

CONCLUSION

- Il faut poursuivre la recherche pour evaluer l'importance relative de la dimension innovation et de la dimension barrieres a l'entrée pour expliquer l'accroissement dans la concentration des marges et des rentes.
- Implications pour la fiscalite et la politique de la concurrence