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# Navigating the labor market as a salaried knowledge worker - a systematic view.

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## Abstract

This article offers a series of views (backed by quantitative toy models) around the best course of actions individuals can follow when seeking career advancement. It shows that leveraging a firm internal labor market does not yield significant promotion opportunities (i.e. less than an average 2% chance on a year on year basis) unless the firm is growing fast. On the other hand, if high growth firms present significant chances (up to 50%) of getting a promotion up to a director or vice president level over a 3 to 5 years time span, their number is limited. The best course of action thus consists in continuously networking to access opportunities. This strategy is shown here to yield a 5 to 8% chance of landing a promotion on a year on year basis. This in turns open up questions for managers and human resources professionals around the best way to structure a firm in a robust fashion...

*Keywords:* Labor economics, Occupational choices, Job mobility, Turnover

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## 1. Introduction:

Over the past decades, there has been a substantial amount of knowledge accumulated in the field of labor economics and career management. From an economic standpoint, the main questions of the gradual increase in compensation illustrating one's career progression, as well as the underlying performance evaluations have been addressed. From a compensation standpoint, a holistic summary can be found in the seminal research of (Lazear, 2018). On this front, the current remaining areas of debates are mainly associated to the optimal structure of non monetary incentives as well as the specific structure of executive pay (see (Gabaix and Landier, 2008; Gabaix et al., 2014) for an open discussion on the exponential nature of their comp based on firm size).

According to the economic doxa, the tenets of one's career are rooted in the idea of differentiating individuals based on their productive capabilities. Interesting this puts productivity appraisal at the heart of one's career and labor journey. For blue collar workers, productivity is easily measured and compensated in a differentiated manner, notably through piece wise schemes (Lazear, 1986). This in turns clearly structures the career of blue collars individuals alongside the notion of progression against a productivity curve (see (Anzanello and Fogliatto, 2011) for review). But the situation is quite different for white collar workers. Here performance appraisal is extremely complex (Ramírez and Nembhard, 2004). Performance in this case is assessed via the proxy of qualitative reviews and ranking. As a result careers are structured as permanent tournaments (Lazear and Rosen, 1981) fueled by the feedback of others. But those tournaments are highly sensitive to a firm context (incl. its incumbent) (Lazear and Shaw, 2018). To the extent that

luck ultimately plays a very large role in one's overall success (Pluchino et al., 2018).

An other interesting trait of white collars workers, is that their jobs are in permanent evolution. Jobs are indeed made of a set of tasks (Grossman and Rossi-Hansberg, 2008) which gets commoditized over time because of technological replacement and displacement off-nearshore (see (Ribes, 2021) for a discussion on professional services (consultants, lawyers etc..)). As a result, certain white collar jobs tend to become highly scripted to the point where their performance can be defined and measured (Ramírez and Nembhard, 2004). So while some job completely change over time, some other almost become blue collar type of roles... This leaves an open question for white collar workers: if their role is ever evolving and performance is not easily measured, how can one drive his/her career? If the question is still open on the economic front, there are some interesting teachings in the management literature, which can be used to address this question. Management scholars have indeed built upon topics related to career development and mobility for decades. On this front, they have first noted, as depicted in the review of (Sullivan and Baruch, 2009), that the initial views of traditional linear career paths, where workers progress hierarchically within an organization, have been gradually replaced by more dynamic and non-linear models where employees jump between employers and roles. If the idea of hierarchical progression is here still prevalent, it is the employer mobility which has starkly increased over the past decades (Lyons et al., 2015). This has come with two consequences. Transition between roles have set an emphasis on lifelong learning and skill development. Meanwhile transition between employers have increased the importance of networking (de Janasz and Forret, 2008; Wolff and Moser, 2010). But, the fact that career are now "protean" in nature (i.e. self driven by individuals in a labor market and no longer bounded to the confide of a single corporation) have also resulted in a transfer of responsibil-

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ity pertaining to training and networking from the firms to the individual worker (Baruch and Bozionelos, 2011; Hirschi and Koen, 2021).

At more granular level, management scholars have even mapped factors influencing career mobility and have found that beyond pure economic questions of compensation and internal advancements (which can already explain 80%+ of the observed mobility as seen for instance in (Ribes et al., 2017)), additional macro (resp. micro) level contextual elements (e.g. industry growth, organization staffing policy... [resp. personality, career interest...]) have proven to further help predict mobility down at the individual level (Ng et al., 2007; Hom et al., 2017). When it comes to networking, which is one of the core determinant of job search (Sullivan and Al Ariss, 2021), the tenets revolve around consistently engaging in external professional and/or community activities, while maintaining an increasing internal visibility (Forret and Dougherty, 2001, 2004). On this front, success relies on building the maximum numbers of contacts (Baruffaldi et al., 2017) that one can consistently sustain (Davis et al., 2020).

But the management literature still lacks, to my knowledge (see the review of (Sullivan and Al Ariss, 2021)), a macro level and quantitative perspective on how can one systematically drive his/her career. There is thus still a gap which may benefit some discussion. The literature has indeed looked at the notion of careers mainly from the point of views of markets, whether those markets are at firm, industrial sector or geographical levels. But very little has been done, to my knowledge, to articulate what a career is for an individual or a household and how to play it efficiently (from an economic standpoint).<sup>1</sup> This is something that this article intend to bridge by providing a quantitative review of the options individuals (and especially white collar/knowledge workers) have to structure their career and by discussing how to best leverage them. To do so, this paper first offers a view of the mechanics at stake within firms and a perspective on the rhythm of individuals careers based on enterprises' growth in section (2). It then provides additional insights on what can be expected by individuals when they position themselves on the labor market in section (3). A discussion finally follows (section (4)) to highlight potential shortcomings in the modeling exercises proposed throughout the article and to suggest potential areas of future research. A crisp conclusion is then used as a wrap-up.

## 2. Banking on being a company's (wo)man:

The concept of organizational careers (some times referred to as "being a company's (wo)man") have been less prevalent over the past decades (Hall, 1996, 2004). However, little has been done, to my knowledge, to model and quantify the efficiency of such careers. This is something this section will address and discussed depending in the growth pattern of the firm the incumbent find him/herself. From experience, there are broadly

<sup>1</sup>Some early attempts (Perthame et al., 2018; Ribes et al., 2020) can be found in earlier research, but their focus was very narrow.

two types of firms: the 'surviving' ones and the 'growing' ones, and depending of the main business dynamic, the impact on individual career is drastically different. This is something which will get illustrated here.

### 2.1. Being a 'surviving' company's (wo)man:

A surviving company is one that grows at an average rate  $\alpha$ . This rate is more or less aligned with the rate at which the economy is evolving. In essence, this means that the revenue of the firm is increasing in the range of 1 to 5% a year depending in various factors such as geographical and economic sector.

Now, every year, employees go through their performance review and in this case, I would argue that only two main outcomes are possible.

The first scenario is one where the employee will be told that (s)he had a good year and that his/her expertise is valued. And somehow, perhaps with some argument related to having build firm specific human capital, the individual salary will be reviewed and increased at a rate not to dissimilar with the grow rate of the company  $\alpha$ . Calling  $\omega_t$  the wage yielded by a role at time  $t$ , this means that next's year wage will follow something like:  $\omega_{t+1} = (1 + \alpha) \cdot \omega_t$ . In short, the employee will get a 1 to 5% raise a year..

The second option is one where a succession opportunity occurs and where the employee can get promoted. For succession to be possible, his/her manager has to leave. This occurs with a probability  $\mu$ . A good proxy here can be found in the level of turnover occurring within the labor market. And although there are a lot of specificities at a firm level (one can retire, a firm can reorganize etc...), it turns out that, in general, the chance of a succession scheme to occur (i.e.  $\mu$ ) are in the 5 to 15% range. Now, what's interesting here are the gains of the succession game and its underlying mechanisms. Succession is a form of promotion, which comes with a wage increase  $\delta > \alpha$ . But if gains are straight forward, the underlying mechanics are not so simple. The first thing to ponder is that for a succession scheme to get activated, someone will have to deem the employee worthy. And here, there are ample evidences that this judgement is poorly correlated to the employee's ability (Buckingham and Goodall, 2019). So in essence, the employee will have a random chance  $\theta$  to be considered eligible to the succession. And given that there are in general  $n$  individuals who could be considered in the process (usually the  $n$  direct reports to the "empty seat"), the probability  $p$  of one getting promoted through a succession scheme can be depicted as:

$$p = \mu \cdot \theta \cdot \sum_{k=0}^{N-1} \left( \frac{(N-1)!}{(k! \cdot (N-1-k)! \cdot (N-k))} \cdot \theta^k \cdot (1-\theta)^{N-1-k} \right) \quad (1)$$

Given that we are poor judge of one's potential in a work environment, it could easily be assumed that the probability of being deemed 'worthy' is more or the same as the probability of getting heads when flipping a coin (i.e.  $\theta \approx 0.5$ ). Besides, since spans of control  $N$  are nowadays in the 5 to 7 range, the probability of getting promoted thanks to a succession mechanisms is of about  $p \approx 1.9\%$ . The company being more in

”survival” mode than in growth mode, it is however very unlikely that a promotion opportunity will occur outside of the succession scheme. Therefore:

**Proposition 1.** *The return  $r$  of being a company’s (wo)man (i.e. the average year on year rate at which the salary increases) in a ‘surviving’ firm follows:*

$$r = \alpha + p.(\delta - \alpha) \quad (2)$$

As a result, being a company’s (wo)man means that with a 98%+ chance, one will get a return similar to the rate at which the economy performs and that with a 1.9% chance, a promotion which usually comes with a return of  $\delta \approx 10\%$ . So a 3 year tenure in the role, comes with a chance of promotion of 5 to 6% and one would have to wait about 40 years to get promoted with 50% chance ... In summary, for the company’s (wo)man to ripe the benefits of his/her commitment in the firm in the form a significant increase in living standards, (s)he will have to wait his/her entire career if not more...

Since the scheme pretty much equates (on average) stagnation, the question arises: why should someone commit his/herself here?

## 2.2. Being a ‘growing’ company’s (wo)man:

When companies grow, they naturally offer promotion opportunities as they require more structure. So, to showcase how being a ‘growing’ company (wo)man can yield interesting results at an individual level, a first depiction of firms’ classical managerial structure will be proposed in sub-section (2.2.1). This will then be used in sub-section (2.2.2) to understand how firm growth drives promotion chances.

### 2.2.1. Management layers & firm size:

It is easy to get a rough approximation of the number of positions in a certain management layer based on the company’s size (expressed in terms of number of employees). Assuming the span of control  $N = 5$  of a manager is constant and considering the standard <sup>2</sup> size segments  $[s_j, s_{j+1}]$ , where  $j \in 0 \dots J = 6$ , showcased in table (1) the number of management positions  $n_{j,l}$  at a level  $l$ <sup>3</sup> in a firm which size is in the  $j$ th segment is more or less worth  $n_{j,l} \approx \frac{n_{j,l-1}}{N}$  (with the norm  $\sum_{l \leq L_j} n_{j,l} = s_{j+1}$ ). The associated estimates are shown in tables (1) and (2).

### 2.2.2. Firm growth & promotion chances:

Being promoted as a firm grows can occur in two main set-ups. First, a reorganization happens even though the firm has not added enough employee to justify the introduction of new managerial layers. This is however not so frequent and

<sup>2</sup>Those segments are indeed traditionally used in administration and economic databases to classify firms based on their size.

<sup>3</sup>As a reminder, the convention here is that the level  $l = 0$  is the one of individual contributors (i.e. individuals without any managerial responsibility)

Firm size (FTEs) $[s_j, s_{j+1}]$	$l = 0$	$l = 1$	$l = 2$	$l = 3$
[0,1]	1			
[2 ; 6]	5	1		
[7;31]	25	5	1	
[32;153]	125	25	5	1
[154;781]	625	125	25	5
[782;3 906]	3125	625	125	25
[3 907;40 000]	15625	3125	625	125
40 000+	78125	15625	3125	625

Table 1: Firm distribution according to their size in a market of  $M = 4$  million enterprises for management layers below  $l \leq 3$  (i.e. ‘vice president’ level)

Firm size (FTEs) $[s_j, s_{j+1}]$	$l = 4$	$l = 5$	$l = 6$	$l = 7$
[0,1]				
[2 ; 6]				
[7;31]				
[32;153]				
[154;781]	1			
[782;3 906]	5	1		
[3 907;40 000]	25	5	1	
40 000+	125	25	5	1

Table 2: Firm distribution according to their size in a market of  $M = 4$  million enterprises for management layers above  $l > 3$  (i.e. ‘vice president’ level)

comes with a number of hurdles, both administrative and human in nature. Because this is rather infrequent, this will not be discussed in this article. Second, the firm changes size to an extent such that managerial roles need to evolve and new managerial layers are added. This actually happening when a firms jumps from one size segment  $j$  to another and will be the focus of this discussion.

Now, in order to yield some quantitative estimates, let us assume growth follows an independent Poisson process of parameter  $\lambda$  (constant over time). In practice, this means that a firm add  $\lambda$  employees per year, on average, to its roster. A first order approximation of this parameter could be drafted by looking at how a firm has grown over the past year from an employee standpoint (or even average it over the past couple of years) and use this as a proxy for  $\lambda$ . Since promotions can occur when a firm of size  $E_t$  reaches at least the next size threshold over a time horizon  $\tau$ , it is interesting to consider the associated probability:

$$\mathbf{P}(E_{t+\tau} \geq s_{t+1} | E_t) = \sum_{k \geq (s_{t+1} - s_t)} \frac{(\lambda \tau)^k \cdot e^{-\lambda \tau}}{k!} \quad (3)$$

Should growth be sufficient, employees will naturally have the possibility to be selected for a promotion which will have a positive outcome with a chance  $\theta$  (if the employee is deemed worthy - see section (2.1) for a discussion). The chance of being promoted over a period  $\tau$  because of firm’s growth thus equates:  $\theta \cdot \mathbf{P}(E_{t+\tau} \geq s_{t+1} | E_t)$ .

The chances of being promoted over a 3 or 5 year tenure can then be easily assessed depending in the company growth pace  $\lambda$  and original size. Results are highlighted in figures (??) &

(??).

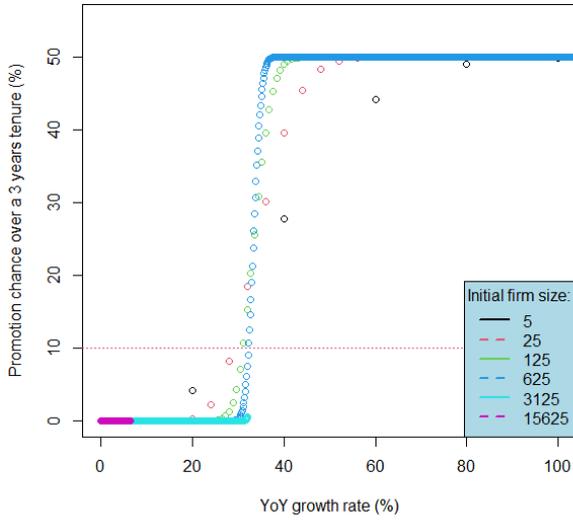


Figure 1: Probability of being promoted based on firm original size and growth rate because of the firm's evolution over a 3 years period.

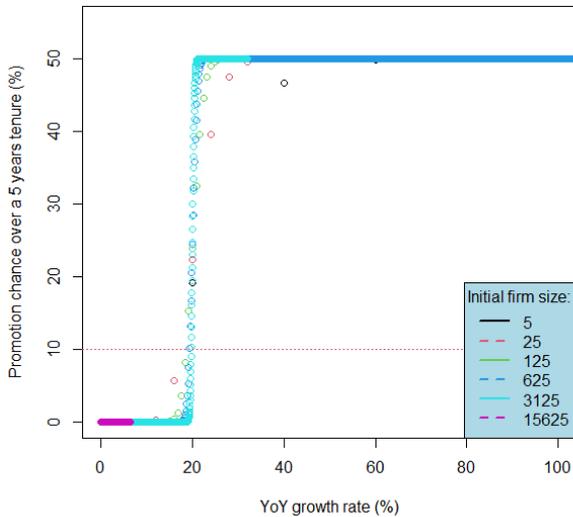


Figure 2: Probability of being promoted based on firm original size and growth rate because of the firm's evolution over a 5 years period.

This comes with a number of interesting interpretations. First, joining a growing small to medium firm (i.e. less than 150 employees) with a growth rate above 20% yields significant chances of promotion over 3 to 5 years (superior to 10 % up to 50%). However, joining a medium size company (i.e. 150 to 700 employees) does only yield returns over potentially 5 years (and is only interesting for promotion up to director ( $l = 3$ ) or VP ( $l = 4$ ) level). Meanwhile, joining a large size company

does not come with promotion opportunities outside of a succession pipeline over a relatively reasonable time span (i.e. < 5 years).

In summary, this section has quantified (through small toy models) why organizational careers may not be so interesting. They indeed come with very little perspective in non growing companies and their appeal in the context of growing firms is limited to small to medium enterprises.

### 3. Banking on the labor market:

The previous section has shown that, in general, if promotion chances in surviving companies are very low, being in a growing company can yield interesting results. However, growing companies are rare... This section will therefore discuss the extent to which promotions and professional growth can be accessed by leveraging the labor market.

#### 3.1. Competing in a perfect market:

##### 3.1.1. Assessing the size of the market:

To understand how competition is structured, it is important to first depict the general market structure which exist when it comes to labor. Let us consider an economy where there are  $M = 4$  millions firms<sup>4</sup>. Stylized economic facts (Axtell, 2001) highlight that firms are distributed according to their size following a Zipf law. Considering the size segments  $[s_j, s_{j+1}]$ , where  $j \in 0 \dots J = 6$ , showcased in table (??), the number of firms in the market in size segment  $j$  can be approximately given as  $m_j = \frac{M}{s_{j+1} \cdot (\sum_i s_i)}$ . Quantitative results are displayed in table (3)

Firm size (FTEs) $[s_j, s_{j+1}]$	Number of firms $m_j$
[0,1]	3 313 773
[2 ; 6]	552 295
[7;31]	106 895
[32;153]	21 658
[154;781]	4 242
[782;3 906]	848
[3 907;40 000]	202
40 000+	82

Table 3: Firms' distribution according to their size in a market of  $M = 4$  million enterprises.

Combining the standard structure of a firm (see section (2.2.1)) with the distribution of the companies in a given market finally enables us to get a first order estimation of the number of positions in the labor market according to their management level (i.e.  $n_{l,j} * m_j$ ). Results shown in table (4) represent an overall economy where  $\sum_l \sum_j n_{l,j} * m_j = 28$  millions individuals are employed across  $M = 4$  millions of firms.

<sup>4</sup>This could for instance represent the situation observed in France

Management level $l$	Number of positions
0	23 M
1	4.6 M
2	812 k
3	141 k
4	24 k
5	4 k
6	616
7	82

Table 4: Number of positions in the labor market per management level.

### 3.1.2. Results in a perfectly competitive environment:

Now, to get an understanding of the pool of jobs opened to external incumbents, some additional assumptions are necessary. First, we will consider that the number of firms and the associated distribution is at an equilibrium. Looking back at section (2), what this means is that the influx of jobs generated by growing firms compensate the labor market compression related firms that are actually shutting down, while 'surviving' firms stagnate. Second, we will consider that potential reorganization are a second order phenomenon at a market level and that the number of opened positions at a certain management level (i.e.  $l > 1$ ) are primarily positions where a manager left and where a succession scheme failed. For each position, this occurs with a probability  $\mu \cdot (1 - \theta)^N \approx 0.3\%$ . Given the labor market structure depicted in the previous subsection, this also translates into  $\sum_j n_{l,j} * m_j * \mu \cdot (1 - \theta)^N \approx 0.3\%$  of all the managerial position to be vacant in a given year, representing a total of 17-18k openings per year.

If competition were to be perfect, those opportunities/ openings would be known and accessible to everyone. Besides from a pure economic standpoint, openings at a level  $l$  would only be interesting for incumbent at a level  $l' < l$  so that they could yield a revenue increase. Since managerial career track are generally progressive, for an individual to access a role at a level  $l$ , this means that they would have to come from the pool of incumbents at level  $l - 1$ . This translates into promotion probabilities that are below the 0.1% rate, which means that if external promotions mechanisms were to be subjected to a perfect competition, they would be far less interesting than firms' internal succession pipeline. Details are showcased in table (5).

Management level $l$	Promotion chances (%)
2	0.06%
3 to 6	0.05%
7	0.04%

Table 5: Promotion chances for incumbents when leveraging the labor market in a perfectly competitive set up.

However, in real life, job matching for management roles is mainly done through networks. This comes with significant differences which will be discussed in the following sub-section.

### 3.2. Playing the shadow market through networking:

The vast majority of managerial roles opened to external incumbents are not advertised on job boards, a phenomenon often dubbed as the "shadow labor market". One of the reasons is that publicly promoting such an opening could, for instance, prove detrimental to team motivation as it would officially signal that no team member is deemed worthy of succeeding to the manager. Another possible reason pertains to the signal such a promotion could send to shareholders... From a job seeker perspective, this creates significant hurdles to access opportunities but, at the same time, limits the competition for roles. Those effects will thus be modeled and illustrated in the next two sub-sections. This will enable a comparison between internal succession schemes and the labor market in terms of outcomes for managers seeking a promotion.

#### 3.2.1. Access the opportunities:

To access an opportunity, individuals must rely on their own professional network. Those networks are by essence small. As discussed in the seminal work of (Dunbar, 1992), individuals are generally able to maintain strong ties with about  $\Phi \approx 50$  other people.

A way to realistically model networks' construction would be to assume that job seekers at a managerial level randomly meet individuals from other companies during, for example, networking events. In this context, the idea is that job seekers draw connections through a series of events in a fashion which is very similar to what is observed in the standard statistical "urn problem" (Johnson and Kotz, 1977). Assuming for instance, that during every event, individuals build/maintain one meaningful connection and that they partake to 50 events a year to structure their network. The probability of them meeting someone who knows about a hidden open position is about the same as picking a random opportunity in a space where the vast majority of positions are already filled.

**Lemma 1.** *In the shadow labor market, the compounded networking efforts yield a yearly probability  $\Psi$  of discovering an interesting opportunity:*

$$\Psi = \sum_{k=0}^{k \leq \Phi} \frac{\Phi!}{k! \cdot (\Phi - k)!} \cdot \sum_j n_{l,j} * m_j * \mu \cdot (1 - \theta)^N \quad (4)$$

In a labor market where parameters are similar to what was used to describe the situation in France, this leads to a probability of accessing at least one interesting opportunity  $\Psi \approx 16\%$  for a network of size  $\Phi = 50$ . A quick sensitivity analysis to the size of one's professional network to his/her chances to access an interesting opportunity can be found in table (6).

In this set up, it also becomes clear that since opportunity discovery is based on networking, it is easier to get access to venues where one can meet VPs (i.e. individuals at managerial level  $l = 3$ ) or SVPs (managerial level  $l = 4$ ) than CEOs of large companies. This is however not something which we will discuss in the context of this article. However, what is also worth

Network size	Access chances (%)
25	8.4%
50	16.1%
75	23.1%
100	29.1%

Table 6: Yearly average access chances to at least interesting managerial opportunity.

noting is that professional networks come with chances to encounter a meaningful opportunity that are equivalent if not superior compared to internal succession schemes (i.e.  $\mu \approx 10\%$ ). Given that internal promotion chances are independent of external network effects, it would appear wise for individuals seeking to a promotion to play both the internal pipeline and the shadow labor market. They would indeed end up by having a 70% to 80% chance to find at least one internal or external fitting opportunity over the course of a 3 years tenure in their job.

### 3.2.2. Competing for opportunities:

If accessing a job opportunity on the shadow job market is one thing, landing it is another one. To convert a job opportunity into an employment, there is some competition at play between all the incumbents who will have been made aware of the opportunity through their network.

As seen in the previous sub-section, accessing suitable opportunities require some effort. Partaking in about  $\Phi = 50$  events over a year (i.e. at least 1 every week) on top of one's daily job is indeed an investment. As this requires time, only a portion  $\rho$  of individuals will dedicate the energy to do so.

Now, the probability  $\epsilon(k, l)$  that another  $k$  individuals access the same opportunity at a level  $l$  is about the same as having  $k$  individuals getting the same pick out of a pool of  $\rho * \Phi * \sum_j n_{l-1,j} * m_j$  (with a probability  $\xi = \frac{1}{\sum_j n_{l-1,j} * m_j}$ ). This is indeed the same as an experiment where they would draw a ball out of an urn of the same size and replace it:

$$\epsilon(k, l) = \binom{\rho * \Phi * \sum_j n_{l-1,j} * m_j}{k} (\xi)^k (\xi)^{\rho * \Phi * \sum_j n_{l-1,j} * m_j - k} \quad (5)$$

**Lemma 2.** *On average, networking efforts yield a number of competitors for one position of:*

$$\forall l, \quad \rho \cdot \frac{\sum_j (n_{l-1,j} * m_j) * \Phi}{\sum_j n_{l,j} * m_j} \quad (6)$$

The results of the lemma (2) for a labor market of a size and structure similar to the one observed in France are illustrated in figures (3) & (4). Those numerical results highlight three main proprieties of this set up. First, competition on the external labor market is much more important than in an internal succession set up. For network of size  $\Phi = 50$ , assuming networking efforts from  $\rho = 20\%$  of individuals yields a competition for a role between 50 stakeholders. This is 10 times the competitive pressure found within a succession pipeline. Second, the higher the managerial level  $l$  of the desired role, the

more complex the competition. Third, network size matters as set-ups where individuals maintain  $\Phi = 20$  meaningful relationships come with about 20 to 30 competitors for a role on average (with small variation across managerial levels), while networks of size  $\Phi = 50$  come with a 50 to 70 competitors.

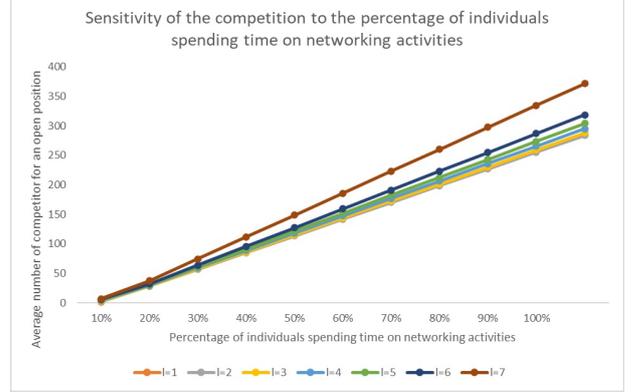


Figure 3: Competition intensity to the networking efforts for individuals building/maintaining a network of size  $\Phi = 50$ .

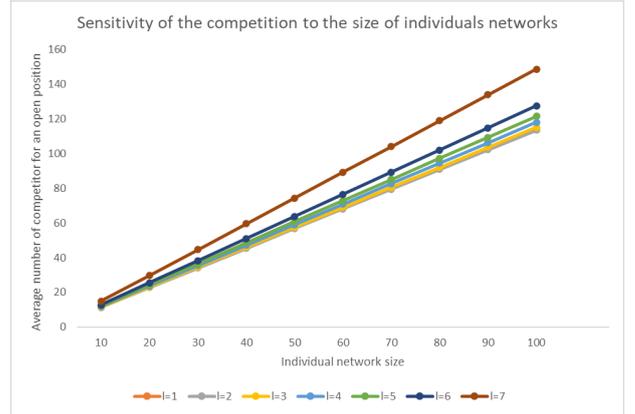


Figure 4: Competition intensity to network size when  $\rho = 20\%$  individuals dedicate some of level of effort on the external labor market.

For a given opportunity with  $k$  competitors, a selection process similar to the one described in the succession schemes occurs. Individuals are interviewed and deemed worthy with a probability  $\theta$  and an offer gets extended to one of the individuals who is considered interesting by the company.

**Lemma 3.** *The probability  $\gamma_l$  of getting a promotion (i.e. a job at a level  $l$  while coming from level  $l-1$ ) through networking is therefore worth:*

$$\gamma_l = \sum_k (\epsilon(k, l) * \theta * \sum_{h < k} \binom{k}{h} \frac{1}{h} \theta^h \cdot \theta^{k-h}) \quad (7)$$

Quantitative results associated to lemma (3) are displayed in figures (5) and (6). They show that chances of getting promoted across managerial levels decrease slightly. However, there are significant differences within a given labor market depending

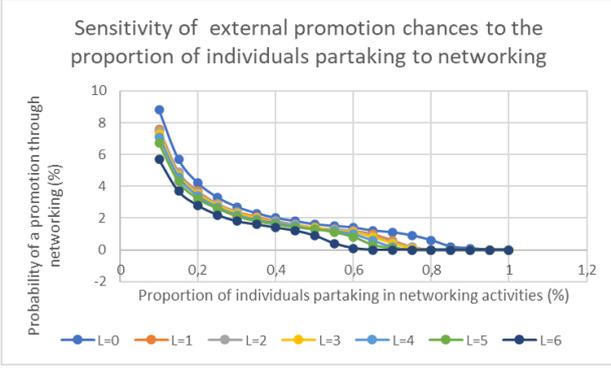


Figure 5: Promotion chances sensitivity to the networking efforts for individuals building/maintaining a network of size  $\Phi = 50$ .

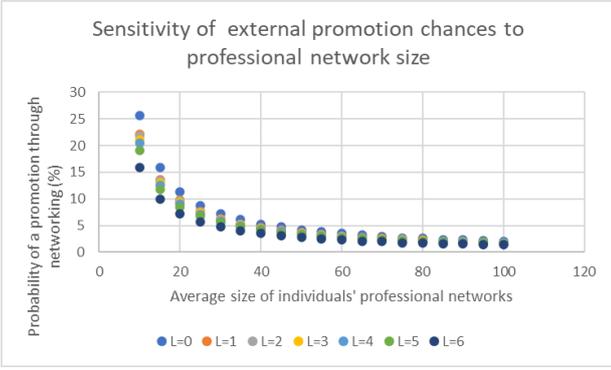


Figure 6: Promotion chances sensitivity to network size when  $\rho = 20\%$  individuals dedicate some of level of effort on the external labor market.

in the networking efforts of individuals and their usual network size. A reasonable set up where networks are of size  $\Phi = 30$  and where  $\rho = 20\%$  of individuals actively engage in networking activities then yields a 8% (at managerial level  $l = 0$ ) to 4% (at managerial level  $l = 6$ ) chance to land a promotion every year. Compared to internal succession pipelines, networking activities are therefore 4 to 8 times more efficient in terms of career advancement. In comparison, a 5 years networking efforts for a role, comes with a chance of promotion of 30% to 40% (compared to about 5% to 10% in the case of a succession pipeline). Moreover, one would have to wait about 10 years to get promoted on the external labor market with 50% chance, compared to 40+ years in the case of an internal succession. So, in a nutshell, networking pays off, on average, much more than being a company person... And this illustrates why organizational careers are nowadays in the decline in favor of more protean/ self-driven careers.

#### 4. Discussion:

##### 4.1. Implications:

The modeling exercises from the previous sections come with three core implications. First, for an individual seeking to constantly maximize his/her earnings, networking efforts are the strategy of choice. Second, because of the compounded effects of networking over time, the level of earnings

achieved (because of human capital/ educational background reasons) when entering the labor market can yield significant differences. Third, although all careers have their own journey, a general navigation pattern emerges for individuals involved in networking activities.

When it comes to the compounded interest of networking, the associated advantages can be quickly grasped by playing with a toy model. A career is a journey of  $\tau \approx 40 - 50$  years spent on the labor market / in the workforce. Assume that careers start with an entry wage  $\omega_0 \approx 50k\text{€}/\text{year}$  and that promotions occur on a year on year basis with a probability  $p$  while yielding a salary increase of  $\delta \approx 10\%$ . If we remove the fixed effects of inflation, the average wage of an individual after  $t$  years on the market simply follows:

$$\omega_t = \omega_0 \cdot \left(1 + \sum_{k \leq t} \binom{k}{t} \cdot (1 + \delta)^k \cdot p^k (1 - p)^{t-k}\right) \quad (8)$$

Assume, as seen in the previous sections, that the promotion probability  $p$  is of 1.9% (resp. 6%) for individuals playing the internal labor market of their firms (resp. the external labor market). The effects of those strategies on earnings are significant. They are summarized in figure (7). After 5 years in the workforce, earnings diverge by about 20% depending in the strategy of choice of the individual. Finally, when reaching the end of one's career, differences peak at 30 to 40% .

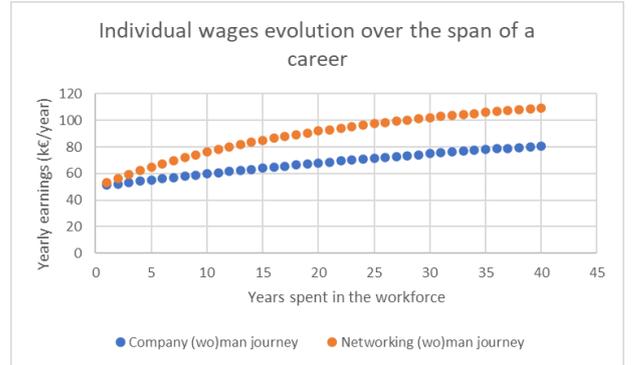


Figure 7: Approximated average salary evolution for individuals across the span of their career

In a similar fashion, initial wage differences (at entry level) can yield a toll on the overall span of a career. As seen in figure (8), individuals who come in the labor market with an entry wage of  $\omega_0 = 35k\text{€}/\text{year}$  and those who come in with a wage of  $\omega_0 = 50k\text{€}/\text{year}$ , end up, on average with a salary gap of 30k€ per year. What this means is that differences between students who come out of a tier A university or school and those who come from a tier B or tier C place will, on average, carry on if they all follow the same strategy. If we consider that individuals from tier B or tier C educational establishments do not benefit from the same coaching and opportunities in terms of networking, this means that the labor market and its structure will actually only accentuate differences who were existing between students.

Finally, what's interesting with the notion of networking is

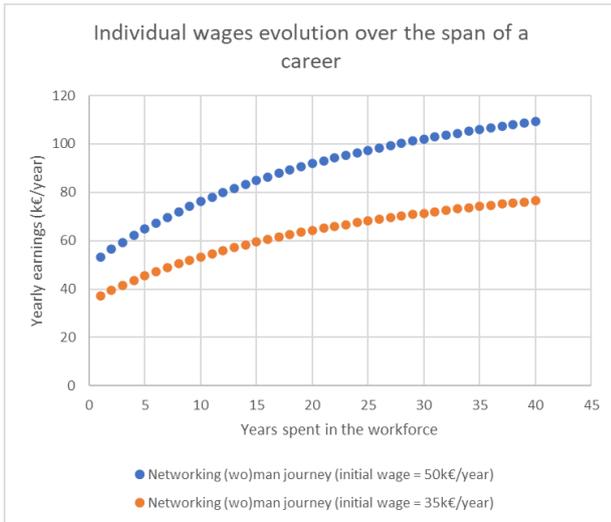


Figure 8: Approximated average salary evolution for individuals across the span of their career

that individuals, especially in the first 3 to 4 managerial levels, have careers which oscillate between firms of different sizes. For instance, first level managers who start in very large firms (i.e. 40000+ employees) have a 70% chance to join a smaller company when there are promoted through network effects. On the other hand, individuals who work in small and medium enterprises are a 70% chance to get promoted by taking a job at a larger firm. There is therefore a form of oscillation. Note that higher level managerial roles are however reserved to large societies.

#### 4.2. Limitations & potential areas of further research:

The modeling efforts supporting sections (2) and (3) are not exempt from shortcomings.

The first series of limitations pertains to the way internal labor market are depicted. Looking at surviving firms, the assumption that succession chances (represented by the parameter  $\mu$ ) are constant and set at a level which is representative of the overall workforce turnover observed on the market is rather generic. Situations at a micro level are yet more heterogeneous. Some managers, for example, are set to retire at a fixed date, which will automatically translates into succession opportunities. On the other hand, certain firms and industries may be paying their workers above the market, which translates into lower chances of a manager leaving and of his/her direct report to have a promotion opportunity. What could be potentially interesting on this front, would be to explicit a set of guidelines enabling an assessment of whether or not the context of a company and of a position translates into high succession chances to a point where external networking efforts are potentially not necessary. This could for instance be the subject of a small companion letter to this article.

A second limitation of this article is associated to the way growth is considered in section (2.2). The underlying assumption here is that growth is organic and that it triggers job openings and promotions. If it is true that organic growth is a com-

mon (if not predominant) pattern, exogenous growth (via mergers and acquisitions) is an important phenomenon which is not described here. Exogenous growth still generates opportunities from a career standpoint, but they are very often triggered by reorganizations and handled, seemingly, on a case by case basis. It would therefore be interesting to explore, for instance via a survey, the effects of such operations on individuals careers and assess if there are any general trends here.

The second series of remarks and potential improvements for this article are associated to the way networking activities (and their impact) are modeled. First, the proposed model was build using a generic distribution (i.e. the Zipf law). If this holds empirically true at a country level, this may be subject to reviews and adjustments when considering specific industrial sectors. This first order approximation can be understood as equivalent to considering that resources are fungible across jobs, which, to an extent, bypasses the notion of professions. This would, for instance, implicitly imply that a lawyer could get a job as financial auditor. It would therefore prove interesting to open a further strand of research to understand, at a macro-economic level, to which extent the patterns described at a country level hold true within a given profession or industry. What would be especially interesting here, is to understand how the consolidation (resp. the dis-agregation) of a profession or an industry (i.e. one where there is few small (resp. large) firms) impacts external promotion chances and networking strategies.

Another important element to consider is the role of recruitment intermediaries (e.g. staffing agencies) in the process of landing a job on the labor market. Section (3) indeed assumed that networking was uniquely opened to individuals seeking a job. Nonetheless, staffing represents an entire industry dedicated to providing job seekers and enterprises with potential matches. Some additional research here could be welcomed. This could notably help understanding the pros and cons of those staffing agencies and/or how to best leverage them from an individual standpoint. A way to approach this could be, for example, to assume that staffing agencies generate a network expansion at an individual level (i.e. higher  $\Phi$ ) but come at the cost of having a lower chance to land a job as additional intermediaries have a potentially skewed view on one's performance (i.e. lower  $\theta$ )...

## 5. Conclusion:

The models and illustrations developed in this article offer a blueprint to navigate one's career as efficiently as possible. Efficiency here is looked at from the angle of increasing one's income thanks to promotions. Within this framework, individuals face two options: playing the internal labor market of their firm and/or playing the external labor market. Within all firms, the internal labor market presents a chance of promotion through succession schemes. In this case, a manager leaves and one of his/her team members takes back the reins of the team. This occur with a chance quantified in this article around 1 to 2% per year. On the other hand, individuals can try to access opportunities within other firms and then compete for it. This can be done independently of internal succession opportunities

and comes with an extra 8 to 10% chance of landing a promotion. So in a nutshell, for individuals to maximize their income, they should both be playing the internal and the external labor market in a consistent fashion. However, the efforts deployed on the external market are more likely to yield the desired pay off.

This article also shows that there may be a general way for individual to accelerate their career by carefully selecting the firms they work for. Partaking to a fast growing small or medium firm (i.e.  $\leq 150$  employees) at the beginning one's career come with significant additional opportunities (i.e. an extra 10 to 50% chance over a 3 years tenure) for an individual contributor or a first level manager to get a promotion. This is linked to the firm organic growth pattern and the associated internal evolution. Moving afterwards as a proximity manager or a director (i.e. a manager of manager) to an organically fast growing (i.e. growth rate above 10%) medium sized firm (i.e.  $\approx 500$  individuals) then presents very high extra chances (i.e. + 10 to 50%) of promotion over the course of a 3 to 5 years tenure. However, once the managerial level of "Vice President" (i.e. managers of managers of managers) has been reached, there is no extra chance of promotion stemming consistently from firm growth. Past that point, career thus mechanically slow down to a rate driven by individuals networking efforts.

If there are, of course, individual deviations to this generic pattern (highlighted for instance in section (4)), as well as certain limitations in the proposed modeling exercise (and thus the associated numerical illustrations), there are two core lessons here. First, individuals should constantly review their options (based on firm's growth trajectory) early in their career and second, they should continuously position themselves both on the market and internally for advancement.

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