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Scoping the transformation of the legal services industry¹

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Abstract

Services firms are engaged in an ongoing transformation. This allows them to remain competitive and survive. This change is enabled by two instruments. On the one hand firms can displace labor off/near-shore and on the other, they can replace labor thanks to information technology (e.g. digital application etc..). There is however an open question around the scope of this transformation on several services sectors, one of which pertains to the legal industry. Existing benchmarks indeed suggest a drastic change where most of the work (90%+) currently done locally could move abroad or be replaced. But does this really hold given that the industry seems to change at a slow pace?

The view offered through this article is that the potential transformation of legal services firms should be much more conservative than originally anticipated. If most of the tasks associated to the delivery of legal advice can be done remotely, many of them cannot be separated from certain activities that must be performed locally. For example, if a significant portion of lawyers' responsibilities can be assumed remotely, only 30% of them can be off/near-shored. Looking at the overall legal landscape, it therefore appears that no more than 20% of the work done within the legal industry can be moved abroad. Beyond reviewing to which extent work can be displaced, this paper also highlights that ambitions around the use of information technology in the legal space should be carefully weighted. Digital instruments do not appear to have a large potential when it comes to replacing labor but should be used as a medium for growth.

JEL Classification. L84; L14; F20; F60; O33

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¹ The findings and opinions expressed in this paper are those of the author(s) and do not reflect any positions from any company or institution.

I. Introduction:

Today's economic landscape is heavily geared towards services directed at business and individuals. For instance, the data recorded by the Organization for Economic Cooperation and Development (OECD) shows that services account for about 60 to 80% of the economy of its constituents (both from an employment and revenue standpoint). If the services sector keeps on growing, its expansion appears mainly fueled by the development of niche services reflecting the ability of the economy to increasingly segment and cater for customers' preferences. Meanwhile, the bulk of the existing services is subject to competitive pressures. As a result, the main challenge of existing services firms is to transform/optimize their current operations (i.e. improve on their profitability and productivity), whilst striving for growth. This transformation comes mainly from two changes. On one hand, firms invest in technology to replace labor at scale and gain both in labor productivity and profitability. On the other, they reallocate some of their activities in cost efficient geographies to increase their bottom line.

The current benchmarks available in the literature around labor replacement (Frey et Osborne 2017) and displacement (Jensen, et al. 2005) are highly ambitious (if not alarming) across several services sub-sectors. They go as far as considering that 90% of services activities could be done displaced off/near-shore (e.g. workers in US replaced by workers in India) or automated. However, results from the field show that about 50% of firms fails at transforming and one of the key arguments advanced to explain those difficulties is that the scope of change was not right, and this mistake led to unanticipated costs. So, one can but wonder if some of the current benchmarks are not overstated and if the transformation of many sub-sectors of the services industry is, in the end, likely to be much more conservative than originally anticipated. On that note, a question has been emerging in the academic community that could be very fruitful to consider in order to advance the debate on the transformation of the service industry: to which extent are the tasks that compose occupations interlinked?

Replacing or displacing labor indeed calls for a review of the value chain (Porter 1985) of a given business model and starts by decomposing the associated sales and delivery process in tasks (Grossman et Rossi-Hansberg 2008). Those tasks are then reviewed to assess whether they could be done by a robot or a digital application or moved elsewhere. The interesting point here is that today's literature on labor replacement and displacement has mainly assumed that tasks are completely separable. But, in practice, that is not true (see (Pisano et Shih 2012) for instance). The question therefore becomes: do the current benchmarks need to be revised considering task separability?

Of course, the notion of transformation varies from sub-sector to sub-sector since it is based on its underlying value chain. For instance, the transformation of the insurance industry has a different spin from the one of the management consulting industry. So, the review of existing benchmarks needs to be undertaken with a specific sectoral lens. An interesting playground for such studies appears to be the legal services industry. The key references available (Jensen, et al. 2005) (Frey et Osborne 2017) here indeed hint at a major transformation of the field (most activities could be displaced and/or replaced) and therefore anticipate sizeable repercussions on local workers and businesses given the size of the legal services sector employment and revenue wise in most mature economies.

To understand the scope of the legal industry's transformation, this paper will first review in details what we know about the sector and the instruments available for firms to operate the change (section II). Then, it will explain the data points leveraged in the study as well as the methodology used to perform the associated assessment (section III). Note that this study is currently oriented towards the US legal

industry because of the wealth of publicly available data maintained by the government on the topic. Third, results of the assessment will be compared and contrasted against existing benchmarks (section IV). Finally, potential next steps will be discussed in section V and followed by a crisp conclusion.

II. Theoretical foundations:

Properly scoping and planning the transformation of a legal services firms relies on three distinct streams of academic knowledge. First, this type of exercise requires an in depth understanding of legal firms and their challenges (i.e. sector specific literature). A quick review of the available body of knowledge pertaining to this sector will therefore be presented in sub section II-a. This will notably show that this transformation is nowadays articulated around two axes: displacing labor off/near-shore and investing in technology to either grow or/and automate part of the delivery model of those firms.

This type of change is however known to be difficult. Debates around the redistribution of labor across the globe and around innovation have been ongoing for the past decades in the academic community. If progresses have certainly been made on those subjects, there are still areas of grey that will be highlighted in sub sections II b and II c and further discussed throughout this paper.

a. What do we know about the legal firms?

The legal services industry has been the subject of a few specific investigations over the past decades, notably around their managerial practices (Galanter et Palay, *Tournament of lawyers: The transformation of the big law firm* 1994) (Landers, Rebitzer et Taylor 1996) (Kuruville et Noronha 2016) (Armour et Sako 2020). But the bulk of the academic knowledge on those firms is derived from articles pertaining to the professional services industry and knowledge intensive businesses (KIBs). Legal services indeed share several characteristics with other sub-segments of the economy (e.g. the management consulting, the accounting industry etc...) both in terms of economic/financial mechanisms as well as in terms of managerial instruments (Løwendahl 2005), (Maister 2012), to the point that they were all clubbed together to form the professional services sector.

Professional services firms (referred to as PSFs in the rest of this paper) are nowadays occupying a growing place in the economy (Empson, et al. 2015). Recent data from the OECD (organization for economic cooperation and development) shows that, amongst a number of mature countries (e.g. France, Germany, the UK, the US...), the professional services sector employs about 10% to the active population and outpaces the overall economy when it comes to growth. This has therefore sparked the interest of the academic community.

In terms of known characteristics, PSFs usually operate as privately held partnerships (Greenwood, Hinings et Brown, "P2-form" strategic management: corporate practices in professional partnerships. 1990) (Greenwood et Empson 2003), where partners are responsible for the sale of specific services and where production is delegated to their employees (Greenwood, Li, et al. 2005). Given that services are first sold and then co-produced with the client (Løwendahl 2005), the business model of PSFs tend to favor sales activities over production ones (given their upstream nature). Financially speaking, partners' earnings usually differ from the ones of their employee by a factor ten. But despite economic disparities, the model is made stable by its specific managerial practices, where employees earn a chance to succeed an existing when they join a PSFs. This career scheme, dubbed the "up or out", locks employees in a form of rate race (Landers, Rebitzer et Taylor 1996) and ensure they stay and remain productive as most of their compensation is deferred until the moment where they access the

status of partner (Galanter et Palay, *Tournament of lawyers: The transformation of the big law firm* 1994).

This can easily be brought to life in the context of legal services space with a few benchmarks coming from the US market. The *American Lawyer*² indeed publishes a yearly ranking of the top 100 US law firms and their characteristics. For example, in 2019, US partners in those firms made an average profit of 1.9M\$, leveraged around 3 lawyers each and the overall productivity of a lawyer was of 1M\$ of revenue generated per year. Each lawyer, who tend to earn 122k\$ a year on average, then usually have to prove him or herself during a period of ten years before qualifying for a potential promotion (Galanter et Palay 1990).

However, if the generic tenets of PSFs are understood, the recent review of (Skjølvik, Perner et Løwendahl 2017) shows that there are still open areas of discussions. Two of them appears on the rise.

First, the rapid growth of PSFs has triggered questions around their expansion strategies and the notion of profitable growth. Beyond natural questions of innovation (Barrett, et al. 2015), a key component of growth (both revenue and employment wise) revolves around “internationalization” (Brock et Alon 2009), (Boussebaa et Morgan 2015). This has indeed been used not only to acquire new clients abroad but also to improve competitiveness by setting up off/near-shore hubs to deliver services at a lower-costs (Sako 2015). Yet, to date, the consequences and causes of such strategies are still open for debate. Evidences around their success is mixed. On one hand, some evidences point to a decrease in PSFs performance (see (Sako 2006) for a discussion on productivity), on the other some tend to show that internationalization is beneficial (see (Ribes 2020) for a discussion on profitability). Besides, the debate here is not limited to the professional services industry and expands to all sectors of the economy (something that will be reviewed in more details in the next sub-section). Recent literature additions have shown that the impact of such a transformation must be appreciated contextually and carefully. As all firms have the same perspectives available, the first movers rip most of the benefits of the change (Eppinger 2019). But internationalization is not a sort of gold rush and accordingly, must be scoped carefully as failure to do so can be costly (Stringfellow, Teagarden et Nie 2008). This article therefore contributes to the literature on PSFs firms, by providing up to date benchmarks in terms of the opportunities internationalization can be present in terms labor reallocation (and therefore costs savings).

Besides questions of profitable growth and internationalization, the second topic on the rise in the literature dedicated to professional services firms revolves around their management and organizational practices (Swart, Hansen et Kinnie 2015) (Kaiser, et al. 2015) (Alvehus 2018). Of course, the revision of PSFs managerial model and the growth registered by the sector are interlinked. On one hand, growth came with questions around the commoditization of professional services and the potential use of technology to automate part of the associated delivery activities (Sako 2009) (Barrett, et al. 2015) (Hinings, Gegenhuber et Greenwood 2018). This recently led to challenges towards the partnership structure (e.g. need for investment/funding) and the reputation model that underpins the sales of professional services (Greenwood et Prakash 2017). On the other, growth has created the need for another type of “specialist” career track (Malhotra, Morris et Smets 2010). Those careers may not lead

² <https://www.law.com/americanlawyer/2020/09/21/the-2020-global-200-ranked-by-revenue-405-68243/>

to a partnership position but have emerged as a vehicle to spur internal innovation and to generate costs savings for PSFs (Malhotra, Smets et Morris 2016) while offering a more stable income progression for employees. There is yet a point when the traditional up or out apprenticeship model breaks (Ribes 2020). By clarifying the scope of the transformation legal firms are going through, this paper should help the academic community assess if the transformation of the legal industry is actually manageable in a traditional set up or if it will call to tearing down the partnership model and move towards a more classical public owned firm set up.

b. What do we know about labor displacement?

The previous sub-section has shown that there was an interest in scoping the transformation of the legal industry as it incrementally builds on the current streams of discussion on professional services and knowledge intensive firms. But beyond sector specific conversations, this paper also builds on the economic literature associated to trade as well as managerial deliberations associated to the topic of labor displacement off/near-shore.

Sub-section 11a has highlighted that one of the current research themes on PSFs pertains to their internationalization. If some of it is naturally dedicated to growth (i.e. how to acquire international clients?), another key motivation is to increase the competitiveness of the service delivery model of those practices (i.e. how to source labor/resources in the right place and at the right cost?). Labor displacement, however, is not new. It is an instrument that has been thoroughly used in the manufacturing industry since the 70s. But, as stressed in the literature review of (Pisani et Ricart 2016), it has only “recently” started to impact the realm of services.

What we know from the field is that there are in general two interconnected motivations for displacing labor. On one hand, the resources based view (RBV) initiated by (Penrose et Penrose 2009) states that firms go for locations where resources are abundant to maximize their innovation potential as well as to support their growth. On the other, the transaction cost economics (TCE) approach (Williamson 1981) assumes that firms go for locations presenting cost advantages. Those approaches are of course not exclusive and have jointly been used to describe what’s happening today in the legal industry (see (Sherer 1995) for a RBV type of discussion and (Kuruvilla et Noronha 2016) for a TCE one).

Independently of the reason and the sector of application (e.g. manufacturing vs services), the approach to assess the potential for labor displacement is always the same. The key idea is to decompose the value chain of a service/product (Porter 1985) into tasks and reflect on where tasks could go (Grossman et Rossi-Hansberg 2008). But as the process of off/near-shoring activities has matured, so has its scope. If initially, the focus was to displace routine production activities (mainly) for costs purposes, recent transformations have shown that there is an increasing focus on displacing complex value-added tasks (Becker, Ekholm et Muendler 2013) in a context of innovation (e.g. what is the best place to form research hubs?). The impact of this change is quite sizeable as currently available benchmarks show that between 20% and 50% of activities could be delivered remotely in the professional services space (Jensen, et al. 2005) (Gervais 2013). In the specific of legal services, (Jensen et L. 2010) even estimated that potentially 96% of the legal activities done in the US could be displaced.

While there an agreement that this kind of transformation is bound to occur and will have an impact, it comes with a number of open questions. In practice, studies have found that 50% of the firms that actually displace work do not get the desired benefits (Pisano et Shih 2012) (Pisani et Ricart 2016). The primary problem here is one of scope. Displacing an activity just because it can be done remotely

has indeed proven to be everything but thoughtful (Doh, Bunyaratavej et Hahn 2009.). Given that tasks are performed by workers and that some of them are interconnected (Blinder 2006), a blunt decomposition of a service delivery chain ultimately leads to hidden costs, additional knowledge transfers (Larsen, Manning et Pedersen 2013) and potentially leads to a problem of hollowing out (Castellani et Pieri 2013) as well as ultimately needing to re-shore activity (Foerstl, Kirchoff et Bals 2016). This therefore raises a number of flags as per (Jensen et L. 2010) initial estimate. Is it realistic to assume that 96% of the legal work could be delivered from say India? What's happening if we move beyond pure costs and geographical concentration considerations and look at the content of legal activities and the inherent nature (including the separability) of the associated tasks? This is where this paper will make one of its contributions to the academic literature.

If there is a clear problem of scope in any displacement effort, there is also one of speed (Eppinger 2019). Off-near/shoring activities is an instrument available virtually to all firms, which means that over the long run, its benefits will be passed to clients, notably through lower prices (see (Kohler 2004) for a discussion on products and (Ribes 2020) for a discussion on professional services). Labor displacement is thus more than anything a tool for firms to survive over the long run and potentially, under certain conditions, a tool to get a performance boost (growth, profitability, productivity) over the short run (Arkolakis, Costinot et Rodríguez-Clare. 2012). Looking at the phenomenon, it seems that the hype associated to the instrument has potentially misled practitioners into thinking that they would get performance increases no matter what the conditions of the marketplace. This paper therefore proposes a pragmatic and hopefully more realistic picture of what off/near-shoring would mean in the context of legal services and offer some views in terms of the potential pace of such a change.

c. What do we know about labor replacement?

The globalization of delivery/production chains is not the only element at play in the transformation of legal (and more generally professional services) firms. Recent technological progresses indeed bring promises in terms of performance improvement (via labor replacement) and generate opportunities for growth (via labor complementation) (David 2015). The literature differentiates two main types of technological prospects: robots, used in the context of physical tasks, and information and communication technology (ICT), used in the context of analytical activities. Interestingly, it has been shown that the approach to embed technology in a firm is the same whether it pertains to robots or ICTs. The goal is to replace repetitive and routine tasks, especially the one requiring a lot of investment in the form of training (Feng et Graetz 2015), and to complement complex ones (Autor, Levy et Murnane, The skill content of recent technological change: An empirical exploration. 2003).

Outcomes, however, have been shown to be different between the two mediums. From an individual standpoint, robots compete with low skills workers and drive wages and prices down. US based evidences such as the one reported by (Acemoglu et Restrepo 2020) show that one more robot per thousand workers reduces the employment to population ratio by about 0.2% and wages by about 0.3% percent. But if robots have a negative impact on low skill workers (lower wages), they tend to benefit the overall population (price going down) and the economy. (Graetz et Michaels 2018) have for example shown that leveraging robots in the US resulted in an average. 0.4pt of production increase for firms and that the associated investment had a very high rate of return (investment recovered in about 18 months).

Yet, if the impact of robots is clear, the impact of ICT is still the subject of debates (Smith et Anderson 2014). ICT are known to complement the analytical tasks primarily performed by highly educated workers and to substitute for routine tasks generally performed by middle educated workers (Michaels, Natraj et Van Reenen 2014). As such, ICT have a different footprint on individuals compared to robots (ICT have little effect on low educated workers performing manual non-routine tasks). But outside of the ICT driving a polarization in skills (Autor, Katz et Krueger 1998) and jobs (Akerman, Gaarder et Mogstad 2015), it has proven very difficult to assess their impact on firms performance (Draca, Sadun et Van Reenen 2007). This has led the academic community to recently call for more case studies on the topic (see the review of (Loebbecke et Picot 2015)).

Now looking back at the legal industry and the nature of its activities, it appears clear that it is more impacted by ICT than by robots. Besides, recent benchmarks such as the one of (Frey et Osborne 2017), show that ICT could potentially be used to assume about 20% of the work activities done in today's professional services industry. But of course, not all jobs are impacted in the same fashion. Looking deeper at the available benchmarks, it was indeed found that if the potential for labor replacement for lawyers was small (3.5% of their activities could be replaced by technology), the impact of ICT on paralegals and legal secretaries was much higher (about 95%+ of their activities could be replaced).

Nonetheless, if there are some initial ideas on how ICT can impact the legal industry, there is, to my knowledge, no discussion around how technology competes with labor displacement. A number of authors (Acemoglu et Autor 2011) have indeed stressed that telecommunication technology advances would help displace routine work off/near-shore. But as the same time routine analytical activities could be potentially automated. This paper will therefore contribute to the field by assessing the overlap between the two instruments and start a discussion on which instrument could be the most appropriate as a legal firm grows.

The brief literature review performed through section II has shown that scoping the transformation of legal services firms can benefit both scholars and practitioners in two ways. On one hand, the associated discussion expands on the current body of research dedicated to the internationalization of those types practices as well as the general discussion around labor displacement off/near-shore. It notably provides a revised picture of previous generic estimates by accounting for recent advances made on the topic of tasks separability. On the other, it blends consideration of labor replacement via technology and displacement off/near-shore to provide a holistic picture of the change currently occurring in the legal industry. This fusion of the two topics appears original and an untapped area of research. Finally, this paper also provides some incremental thoughts (see section VI) around the sustainability of the managerial model of legal firms (i.e. the partnership model and its associated succession scheme) and the pace of their transformation.

III. Methodology:

Scoping such a transformation calls for a review of the activities at the core of the sales and production process of legal services. To do so, this paper proposes a three steps approach that will be detailed throughout this section. This first step, highlighted in sub-section III-a, consists in leveraging publicly available data maintained by the US government to understand the core tasks involved in the delivery of legal services and infer the associated volume of work. The second one revolves around estimating whether a task can be done remotely and/or by a robot. This was done via a survey, the

details of which are summarized in sub-section III-b. Finally, sub-section III-c will show an option to account for the non-separability of tasks to fully assess the potential for labor displacement and replacement of legal activities. Note that section III is fully dedicated to a methodological review and that results will be analyzed in section IV.

a. Understanding the tasks involved at core of the legal services industry:

The US administration maintains several data sets and off-the-shelf referentials that can be used when studying the transformation of a sector or an industry. The US Bureau of Labor Statistics notably runs a program called OES (Occupational Employment Statistics). The program maps occupational data (jobs, defined according to the Standard Occupational Classification – SOC, wage, employment...) to industrial sectors (defined as per the North American Industrial Classification System – NAICS) and can be leveraged to assess a sector’s blueprint in terms of employment. In the case of legal services (defined under NAICS code 5411), the 2019 OES dataset shows that 3 core jobs (lawyers, paralegals and legal secretaries) make up 73% of the overall US workforce working in the legal industry (see table 1). Given their prominence of those 3 occupations, they will be the focus point of this study.

Table 1 - US 2019 Occupational data in legal services.

Occupation	SOC code	Occupation footprint in the legal services sector (% of overall employment)	Average wage (\$/h)
Lawyers	23-1011	37%	59.1
Paralegals & legal assistants	23-2011	23.4%	24.9
Legal secretaries	43-6012	12%	22.7

OES occupational data can then be coupled with the 2020 O*NET³ referential (a US Department of Labor Program) to understand the main tasks involved in the value chain of a given sector. The O*NET database has been continuously collecting information around each job j present in the SOC structure since 2001 and providing a standard view of the $n \in [1; N_j]$ tasks associated to a job j . This can be used to provide a rating of the importance (I_j^n) & frequency (F_j^n) of each task n in each job j . Note that the O*NET database has proven over the years to be a cornerstone for research aimed at understanding the impact of trade and technology on occupations (Blinder 2006) (Jensen et L. 2010) (Frey et Osborne 2017).

In the O*Net referential, the importance of a task n in a job j is assessed through continuous surveys on a scale from 1 (Not important) to 5 (Extremely important). Each of the K response (generally a hundred of them) are then averaged and normalized on a scale from 1 to 100 as per the O*Net methodology to provide the final importance score (where $O_{j,k}^n \in [1; 5]$ is the original rating provided by an incumbent) :

$$I_j^n = \frac{\mathbb{E}_k(O_{j,k}^n - 1)}{4} * 100$$

³ <https://www.onetcenter.org/overview.html>

Tasks frequency is also assessed through continuous surveys run by the US department of labor. In this case, the survey asks the incumbent to detail whether the task is performed frequently (option A defined as “daily, several times a day, hourly or more”), occasionally (option B defined as “more than once a month, more than once a week”) or rarely (option C defined as “once a year or less, more than once a year”). For each job j and task n , O*Net then reports the percentage of response received on each category $p_{j,A}^n, p_{j,B}^n, p_{j,C}^n$. To estimate to the average frequency of a tasks (F_j^n), the following quantitative assumptions were taken for the purpose of this study: when rated frequently, the tasks were assumed to be performed every day, when occasionally, every week, rarely, twice a year. The overall frequency was then defined as the average number of times the task was performed during the year according to the following formula:

$$F_j^n = p_{j,A}^n * 365 + p_{j,B}^n * 52 + p_{j,C}^n * 2$$

b. Estimating the volume of work that can be done remotely or by a robot:

The importance and frequency estimates derived in the sub-section III-a can be used to estimate the overall volume of work doable either remotely and / or by a digital product. This will be done in two steps. First, the volume of work V_j^n (expressed in hours per employee per year) associated to each task in each job will be estimated. Then, each task n in each job j will be reviewed and its characteristics (i.e. can it be done remotely/ be done through ICT?) will be appraised.

The overall workload of tasks is not a readily available measure in the O*Net database. It must therefore be estimated. To do so, this paper builds upon the core assumption that workers spend an amount of time on the activity that is proportional to its importance. Calling T_j^n the amount of time a worker in job j spends on task n and assuming a worker can dedicate 1750 h to its occupation per year, two options arise. On one hand, tasks workload can be assessed using only their reported importance (i.e.

$T_j^{n,m_1} = \frac{I_j^n}{\sum_{k < N_j} I_j^k} * 1750$). This will be referred to as method 1 (with the superscript m_1). On the other,

tasks workload can be assessed based on both their importance and frequency (i.e. $T_j^{n,m_2} = \frac{I_j^n \cdot F_j^n}{\sum_{k < N_j} F_j^k \cdot I_j^k} * 1750$).

This will be referred to as method 2 (with the superscript m_2). Note that both methods will be later used to discuss the potential for labor displacement and replacement in occupations tied to the legal sector. This will prove useful in discussing whether or not a change in methodology can lead to different results (from an order of magnitude standpoint) and will provide additional perspectives to this study.

Beyond estimating workload, scoping the transformation of legal firms also calls for a review of the labor displacement (i.e. $d_j^n \in \{0; 1\}$) and replacement (i.e. $r_j^n \in \{0; 1\}$) potential of each task n in each job j . This was enabled by administering a survey (through Monkey Survey - a popular survey tool) directed at a panel of lawyers. Given the nature of the resources used in this study (benchmarks from the literature pertaining to US workers, O*Net activity referential maintained by the US bureau of labor statistics...), the survey was aimed at US practitioners. Note that running such a survey to a different audience (e.g. UK, German, French lawyers) may constitute a valid future area of research, but it was not in scope for this study.

The panel of lawyers used in this paper was generated by building a custom web-crawling program in R⁴ against the Washington bar directory⁵. The directory stores the contact details of 33638 active lawyers in the state of Washington US who are eligible to practice. Out of this population a random sample of 1000 lawyers was drawn. The choice of this sample size was motivated by the fact that surveys have in general a low response rate (5 to 10%) and a panel of about 50 to 100 respondents is usually needed to get statistically relevant results (on binomial tests). Given the statistical rules of thumb mentioned before, it was therefore chosen to leverage the capability of monkey survey to its fullest. Finally, note that in this study, there was no specific attention paid to the primary field of expertise of lawyers (e.g. aviation law, animal law etc...). The aim of this paper was indeed to draw generic facts on the legal industry. However, discussing the details and potential differences of each sub-segments of the sector may also constitute a valid future avenue for investigations (notably for practitioners).

The survey in itself was designed around 4 sections. Section one highlighted the objectives of the study, sections 2 (resp. 3 & 4) then asked individuals to assess whether a task $n \in \{1; 26\}$ performed by a lawyer [$j = 1$] (resp. a paralegal [$j = 2$] & legal secretary [$j = 3$]) could, in their view, be delivered remotely (Yes | No) and/or be performed by an application (Yes | No). For each tasks n and each job j , the statistical relevance of the hypothesis “the task can be performed remotely” (i.e. $d_j^n = 1$) and “the task can be performed by a program” (i.e. $r_j^n = 1$) was then assessed via a binomial test. Results were then used alongside workload estimates (i.e. T_j^{n,m_1}, T_j^{n,m_2}) to generate a picture of the volume of work that could potentially be subject to labor displacement or replacement in each job. Results are presented in detail in section IV.

c. Assessing the volume of labor that can be displaced or replaced:

The methods presented in section III-d enable an assessment of the tasks (and the associated volume of work) that could potentially be replaced and/or displaced. But to really scope the transformation bound to occur in the legal services industry, one must account for the fact that some tasks cannot be separated.

The linkages between tasks within a job j can be represented in a matrix M_j , where the element $M_j(n_1, n_2) \in \{0; 1\}$ represents the connection between a task n_1 and a task n_2 and where $M_j(n_1, n_2) = 1$ means that the two tasks need to be performed by the same worker (i.e. they cannot be separated). Getting those matrixes filled for in the context of 3 legal occupations in scope for this study is however a taxing data exercise. An individual indeed needs to fill 3 matrixes of respective size 22*22, 16*16, 12*12. Therefore, running a survey to gather the associated information did not appear as a suitable option. Instead, an approach similar to the one of (Blinder 2006) (A. Blinder 2009) was used. Two independent experts were asked to assess the separability of the tasks in each job. Results were collected and aggregated in the following fashion. If both raters agreed that tasks n_1 and n_2 in a job j could not be separated, they were considered as non-separable (i.e. $M_j(n_1, n_2) = 1$), otherwise they were assumed separable. Note that inter-rater agreement was measured via a Kappa coefficient (a standard statistic used in this type of set up (Brennan et Prediger 1981)) and that they associated results are reported in section IV. As a side note, an interesting future avenue of research here could be to programmatically assess task separability. If the exercise can be “manually” performed in the context of a few jobs, it

⁴ <https://www.r-project.org/>

⁵ <https://www.mywsba.org/PersonifyEbusiness/LegalDirectory.aspx>

becomes very difficult for sectors that leverage multiple occupations (e.g. the management consulting sector).

Based on those ratings, the labor replacement (R_j) and displacement (D_j) opportunities for a job j were assessed in the following manner⁶:

$$R_j = \frac{\sum_n r_j^n \cdot 1_{\{\sum_k M_j(n,k).r_j^k=1\}} \cdot T_j^n}{\sum_n T_j^n}; D_j = \frac{\sum_n d_j^n \cdot (1 - r_j^n) \cdot 1_{\{\sum_k M_j(n,k).d_j^k=1\}} \cdot T_j^n}{\sum_n T_j^n}$$

Note that both ratings are in this case expressed in terms of hours per year. Moreover, both estimates were calculated according to the two methodological options (m_1 and m_2) highlighted in section IIIb and used to assess the workload of a task. Associated results are of course discussed in section IV. Finally, the underlying assumption in those assessments was that if a task could be both displaced and replaced, it would end up being done by a digital product. This of course assumes that technology is mature enough to be a cheaper alternative than physical labor and may not completely stand true. To enrich the

conversation, the overlap ($O_j = \frac{\sum_n d_j^n \cdot (r_j^n) \cdot 1_{\{\sum_k M_j(n,k).d_j^k=1\}} \cdot T_j^n}{\sum_n T_j^n}$) between labor displacement and replacement in a job j was estimated and will be reviewed in section IV.

IV. Results:

Based on the methods presented in the previous section, available results on the transformation of the legal services industry will now be presented. This will be done in two steps. First, the results of the survey and the experts' ratings will be displayed. This will enable a review of the associated assessment of the sector's evolution. Second, the effects of task separability and labor substitutability (i.e. labor can be done either off/near-shore or by a digital application) will be highlighted. This will allow a discussion around the impact of the transformation on legal services delivery costs and productivity. Additionally, it will show what's happening if a firm does not have the right scope for its change efforts.

a. Results of the study:

To understand if tasks associated to the delivery of legal services could be done remotely or performed by a digital tool, a survey was run using a sample of 1000 lawyers (see section III for details on the methodology). The sample was generated by randomly picking out email addresses out of the list of contacts the Washington (US state) bar. The associated list contains more than 30000 contacts. The survey was run over a week in January 2021 (with one reminder in the middle). It generated a total of 45 responses (i.e. engagement level at 4.5%). The survey was divided in three parts.

The first part of the questionnaire asked respondents to rate whether the tasks performed by lawyers could be performed remotely (yes/no) and/or by a digital tool (yes/no). This first set of questions was fully completed (i.e. 100% response rate), detailed results can be found in the appendix. Given the response rate (and the associated statistical power⁷), it was therefore assumed that an activity n for lawyer could be done remotely [resp. by a digital tool] (i.e. $d_j^n = 1$ [resp. $r_j^n = 1$]) if more than 75% of

⁶ The structure of the formulas presented here stem from the following property of the proposed framework. Given that a task n is interlinked with itself (i.e. $M_j(n, n) = 1$), it can only be displaced (resp. replaced) if it is not linked to another activity that must be performed by a local worker (i.e. $\sum_k M_j(n, k).d_j^k = 1$, resp. $\sum_k M_j(n, k).r_j^k = 1$).

⁷ For a population of 30000 individuals, 43 responses yield a confidence level of 95% with margin of error of 15%.

the respondent thought so. Note that, on average, 75% (resp. 22%) of the respondents thought that tasks done by a lawyer could be done remotely (resp. by a digital application). Note that respondents mentioned that all tasks that could be done by an application could also be done remotely.

Part 2 & 3 of the survey asked respondents to rate tasks for paralegals and legal secretaries. Both sets of questions were only completed by 75% of the respondents⁸ (33 responses accounted for an overall engagement level of 3.5% amongst the surveyed population). Given the response rate, the same criteria was used across lawyers, paralegal and legal secretaries to assesses the displacement and replacement potential of a task (i.e. an activity n done by a paralegal or a legal secretary can be performed remotely [resp. by a digital tool] (i.e. $d_j^n = 1$ [resp. $r_j^n = 1$]) if more than 75% of the respondent thought so). In this case, an average of 74% (resp. 79%) of the responses stated that tasks performed by a paralegal (resp. legal secretary) could be done remotely and 39% (resp. 45%) by an application. Here again, most of the tasks that could potentially be assumed by an application could also be done remotely.

It the survey generated a statistically relevant picture of whether or not an activity could be done remotely or by a tool, linkages between tasks needed to be reviewed. The separability of tasks within legal occupations was therefore assessed by 2 experts (see section III). In this type of experiment, the literature suggests that the agreement between raters should be reviewed according to Cohen's Kappa (κ) (McHugh 2012). The interpretation of this indicator reads as follows: if $\kappa \in [0.01; 0.2]$ (resp. $\kappa \in [0.21; 0.6]$), agreement between raters is very limited (resp. fair to moderate), but if $\kappa \in [0.61; 0.8]$ (resp. $\kappa \in [0.81; 1]$), agreement is substantial (resp. almost perfect). Note that earlier studies on those transformation topics, which also relied on experts opinions, recorded agreement scores around $\kappa \approx 0.7$ (see for instance (A. Blinder 2009)).

Once analyzed, the tasks separability ratings display a high level of alignment between experts across all 3 occupations. Cohen's Kappa was worth $\kappa = 0.75$ on ratings pertaining to lawyers, $\kappa = 0.76$ for paralegals and $\kappa = 0.82$ for legal secretaries. Looking at the overall results, a task performed by a lawyer (resp. a paralegal or a legal secretaries) is linked (on average) to another 6 (resp. another 4 or 2). Interestingly, this aligns with the intuition that higher paid occupations have a more complex structure. Finally, raters' agreement was calculated for each task in each job. If task level agreement displayed small variations (for lawyers $\kappa \in [0.59; 0.95]$, $\kappa \in [0.66; 0.92]$ for paralegals, $\kappa \in [0.71; 1]$ for legal secretaries), there was no activity where expert's alignment was moderate or poor.

The data generated by the survey and experts' ratings was used to estimate (according to the methodology described in section III) the extent to which the activities within legal occupations can be displaced off/near-shore and replaced by digital applications. Results are displayed on figure 1 and table 1.

The first finding of this study revolves around the impact of ICT on those occupations. Once accounting for tasks separability, labor replacement opportunities are estimated to be significantly lower than previously estimated (Frey et Osborne 2017). The percentage of labor that could be replaced for lawyers (resp. paralegals) indeed goes down from 3.5% to 0% (resp. 95% to 0%). Note that this finding is robust against a change in methodology used to estimate workload (i.e. method 1 vs method 2). For those two occupations, it thus seems that digital tools should aim at complementing existing activities and

⁸ Engagement was probably lower as respondents were all lawyers and did not necessarily have enough exposure to other occupations to perform the assessment.

developing new services rather than aiming at replacing existing activities. When it comes to legal secretaries, labor replacement opportunities also appear negligible, which drastically differ from the initial ideas shared by (Frey et Osborne 2017) (i.e. 90-95% of legal secretaries work can be replaced).

The second finding of this paper revolves around the potential for labor displacement off/near-shore of legal activities. Here again, accounting for task separability leads to much more conservative estimates than the ones previously highlighted in the literature (Jensen, et al. 2005), where 95% of legal activities were assumed to be ripe for displacement. In this case, the volume of work that can be displaced for lawyers goes down to about 30% and about 5% for paralegals. This finding is also robust against a change in workload estimation methodology in the case of paralegals, but subject to small fluctuations (+/- 5%). Finally, if most of the legal secretaries' work cannot be replaced by digital tools, it can be displaced off/near-shore. Besides, depending on the estimation methodology, the amount of work that can be pushed in a cost friendly location represents between 60% and 70% of the overall workload currently assumed by local workers.

Employment wise, the transformation studied in this paper is very likely to trigger quite a change in the legal industry's landscape. However, when task separability is factored in, results are much more conservative than previous estimates which predicted the entire industry to either move off/near-shore or to be replaced. Now, with the proposed methodology, 1/3 of lawyers' work activities and 1/20 of paralegal labor could be moved to another location. But depending on its pace, this change may very well be absorbed by the ongoing growth of the sector (i.e. this will have no repercussion employment wise), something that will be discussed in more details in the final section of this article. But this does not hold true for legal secretaries. This occupation, which employs 12% of the overall legal industry workforce, appears to be bound to experience a severe reduction in workforce locally as more than half of the associated activities can be displaced.

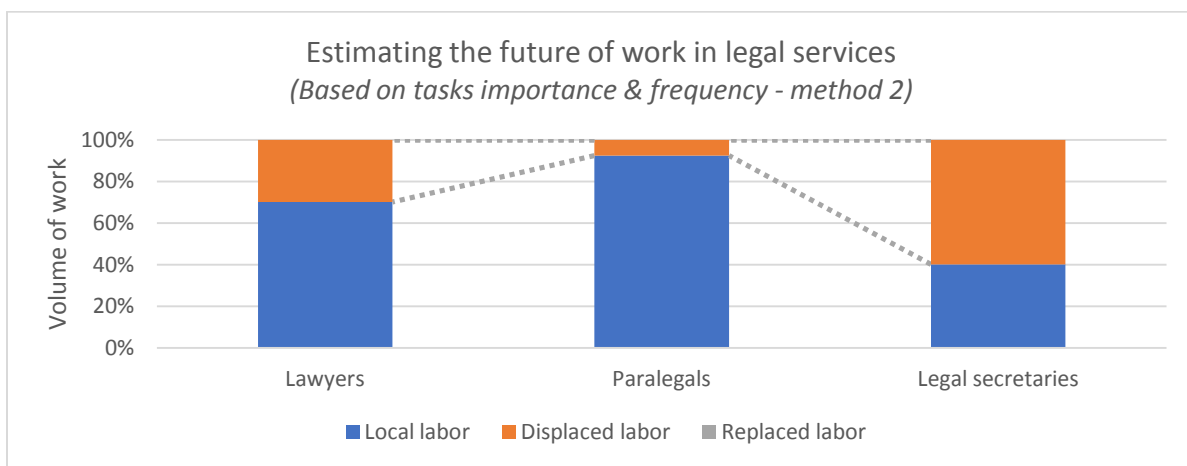


Figure 1 - Scope of the transformation within legal occupations.

	% of labor that can be displaced off/near-shore but not replaced by a program	% of labor that can be replaced by an application

Workload assessment method	Method 1 (based on task importance)	Method 2 (based on task importance and frequency)	Method 1 (based on task importance)	Method 2 (based on task importance and frequency)
Lawyers	31.2%	28.9%	0%	0%
Paralegals	3.6%	7.6%	0%	0%
Legal secretaries	70.7%	59.9%	0%	0%

Table 2 - Details behind the estimated scope of the transformation of legal occupations.

b. What are the effects of task separability & labor substitutability?

Considering the results of section IV-a, it appears that the transformation of the legal industry is less drastic than what was previously suggested by the literature. One key problem though is that if firms attempt to separate tasks that are interlinked, some tasks will have to be performed twice (i.e. work gets duplicated onshore and off/near-shore), which will lead to increased costs and a loss in productivity. This sub-section (IV-b) will therefore details the effect of separability on labor displacement and replacement and provide a view in terms of the reduction in performance firms may face if they don't size their efforts properly (i.e. don't account for tasks separability). Additionally, this sub-section will be used to stress the potential overlap existing between labor replacement and displacement.

To understand what could go wrong if legal practices' transformation is not approached properly, let's start by reviewing the effect of tasks separability on the potential for labor displacement across legal occupations. Using the data generated by the survey, it is possible to calculate the proportion of work that could be potentially displaced assuming that no tasks are interlinked (i.e. $\frac{\sum_n d_j^n \cdot T_j^n}{\sum_n T_j^n}$ as per the conventions described in section III) and compare it against the proportion of work that can be off/near-shore once linkages between work activities are taken into account (i.e. $\frac{\sum_n d_j^n \cdot 1_{\{\sum_k M_j(n,k) \cdot a_j^k = 1\}} \cdot T_j^n}{\sum_n T_j^n}$). Results, displayed in figure 2 and table 2, show that outside of legal secretaries, tasks non-separability induces a very important reduction in the amount of work that can be displaced. About 30% to 40% of the work done by lawyers and paralegals can be performed remotely but is linked to local activities and therefore must remain onshore. Note that if changing the workload estimation methodology leads to differences in the associated estimates, the main finding here holds true.

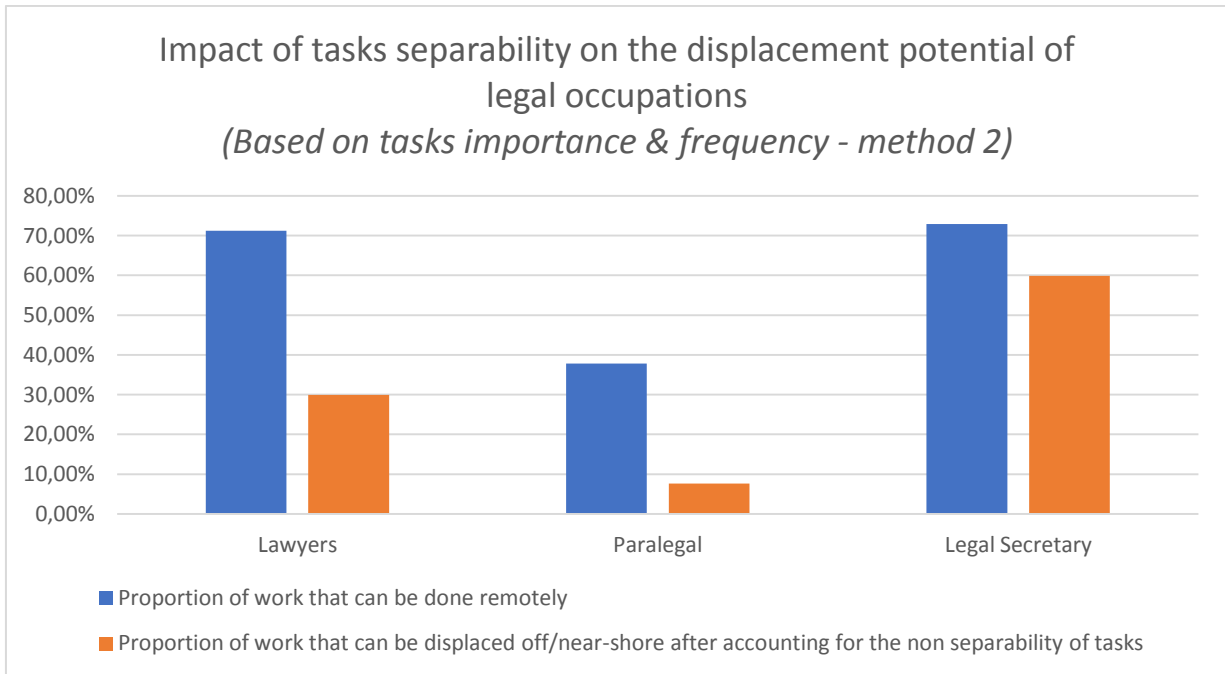


Figure 2 - Tasks non separability effect on labor displacement potential in the legal industry.

Workload assessment method	% of labor that can be done remotely		% of labor that can be displaced off/nearshore after accounting for the non-separability of tasks	
	Method 1 (based on task importance)	Method 2 (based on task importance and frequency)	Method 1 (based on task importance)	Method 2 (based on task importance and frequency)
Lawyers	80.77%	71.2%	32.15%	29.89%
Paralegals	44.61%	37.83%	3.59%	7.64%
Legal secretaries	77.06%	72.92%	70.72%	59.90%

Table 3 - Effects of tasks non separability on labor displacement in legal occupations.

Now, according to the data provided by the US Bureau of Labor Statistics, US lawyers (resp. paralegals) come at a cost of 59.1 \$/h (resp 24.9\$/h) (see table 1). So, if 29.8% (resp. 7.6%) of the activities assumed by lawyers (resp. paralegal) are displaced to a location where labor is 50% cheaper, hourly costs fall to 50.3\$/h (i.e. cost reduction of 15%) for lawyers' labor and to 23.9\$/h (i.e. cost reduction of about 4%) for paralegals. On the other hand, if more work gets displaced, it must be redone. For example, if a firm attempts to displace 71% of the work done by lawyers (resp. 37% of the work done by paralegals), the practice will end up having to assume a labor cost of 62.5\$/h for lawyers (i.e. a 5.7% cost increase) and a labor cost of 27.7\$/h for paralegals (i.e. a 11.2% cost increase). This small example shows that task separability matters as getting the wrong scope for the transformation leads to rework and extra costs.

The same holds for labor replacement. Using the data from the survey, it is possible to calculate the proportion of work that could be potentially assumed by digital tools assuming that no tasks are interlinked (i.e. $\frac{\sum_n r_j^n \cdot T_j^n}{\sum_n T_j^n}$ as per the conventions described in section III) and compare it against the

proportion of work that can be replaced once linkages between work activities are taken into account (i.e. $\frac{\sum_n r_j^n \cdot 1_{\{\sum_k M_j(n,k) \cdot r_j^k = 1\}} \cdot T_j^n}{\sum_n T_j^n}$). Results, displayed in figure 3 and table 3, show that the non-separability of certain legal activities means that digital tools cannot replace any of the work done by lawyers, paralegal or secretaries. Therefore, as mentioned earlier in section IV-a, ICT should be considered as a vehicle to complement the work done by lawyers and paralegals via new services rather than an instrument to replace work. Note that this result also appears robust against a change in the methodology used to estimate workload (see table 4).

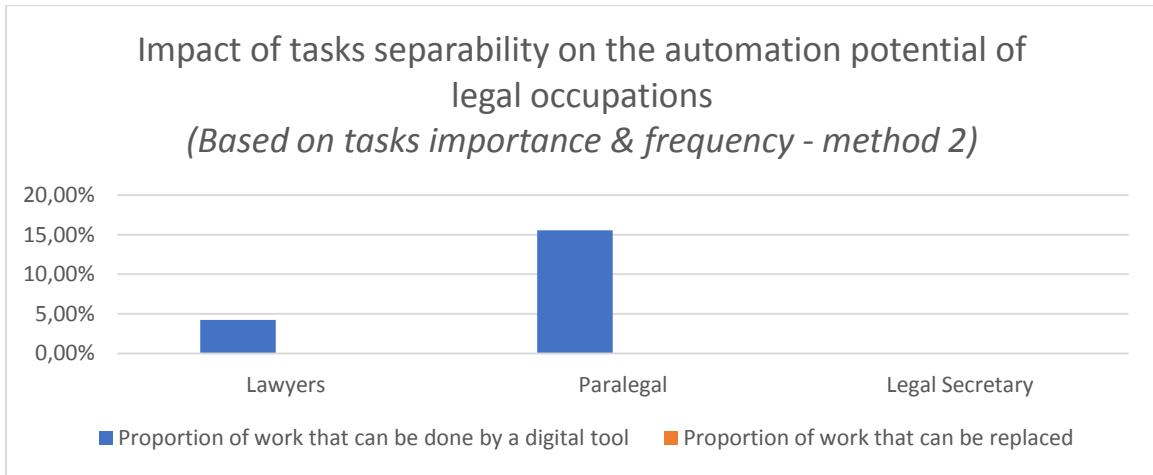


Figure 3- Tasks non separability effect on labor replacement potential in the legal industry

Workload assessment method	% of labor that can be done by a digital tool		% of labor that can be replaced after accounting for the non-separability of tasks	
	Method 1 (based on task importance)	Method 2 (based on task importance and frequency)	Method 1 (based on task importance)	Method 2 (based on task importance and frequency)
Lawyers	3.11%	4.23%	0%	0%
Paralegals	14.59%	15.54%	0%	0%
Legal secretaries	0%	0%	0%	0%

Table 4 - Effects of tasks non separability on labor replacement in legal occupations.

Besides, similarly to what's happening when displacing labor, getting the wrong scope to the digital transformation of a legal practice results in extra costs. Assume for instance, that a digital tool costs 1M\$ to implement and come with the promise of replacing 4% of the work currently done by lawyers (e.g. to automate searching through public records to produce opinion and establish ownership). In this case a US practice would expect to save about 4.8k\$ per lawyer per year. First, this means that the practice would have to be big enough to yield some benefit of the change. In this case, if the practice wanted to yield a return after the first year of implement (resp. the second), it would need to employ about 200

(resp. 100) lawyers. But post implementation, the non-separability of tasks would imply that work would in practice not be replaced and that the firm would have paid 1M\$ for nothing....

V. Discussion:

The results highlighted in section IV have shown that a sizeable transformation is ongoing in the legal industry. Over the near future, 30% (resp. 8%) of the work done by lawyers (resp. paralegals) can be re-allocated off/near-shore whilst most all the activities (59%) done by legal secretaries will be assumed by off/near-shore workers. This change raises yet a few questions around the associated consequences first on legal practices performance and second on their employees. This section will therefore discuss those two topics and be used to propose potential avenues for future research.

When it comes to discussing the consequences of this transformation (either on firms or individuals), what matters is mainly the speed at which the change can occur. This was recently hinted at by (Eppinger 2019) and appears like an area that would greatly benefit some further research. This could for instance mean investigating the key parameters that drive the change at pace within a firm or reviewing the speed at which trade is impacting the legal industry (macro level study). At firm level, a possible starting point here could be to leverage the success drivers identified by the literature around offshoring efforts (Hutzschenreuter, Lewin et Dresel 2011) and see if those parameters are linked to the pace of the transformation.

To understand why speed is so important, let us consider a simple example: a legal firm which generates $y(0) = 100M\$$ of revenue per year at time $t = 0$. Given the employment footprint highlighted in table 1, the service delivery model of this firm can be approximated as follows: for every lawyer, the firm employs 0.6 paralegal, 0.3 secretary and another 0.74 employee (e.g. administrative staff). Assume that the transformation has not started. According to the data provided by the US bureau of labor statistics, a lawyer costs about 122k\$ per year or 59.1\$/h, it can therefore be inferred that a legal employee works on average 2060 hours per year. Additionally, benchmarks from the *American Lawyer*⁹ states that a legal firm generates about 1M\$ worth of revenue per lawyer it employs. This can be used on top of the data pertaining to the service delivery model in place in the industry to deduce that legal firms currently charge a price $p(0) = 180\$/h$ per hour of work. The 100M\$ firm therefore currently employs 100 lawyers, 63 paralegals and 32 secretaries and given the costs reported in table 1, this firm currently yields a profitability (expressed in % of its revenue) of $\pi(0) = 79.2\%$.

Now let us imagine that the firm plans to transform. Over the next couple of years, prices are likely to go down¹⁰ because of competitive pressure by 2% a year as all legal firms embark on the same competitiveness journey (i.e. $p(t + 1) = p(t) * 1.02$) (see (Ribes 2020) for example¹¹). Assume that, for the sake of simplicity, local salaries are fixed (at the levels displayed in table 1), that wages off/near-shore are 50% lower than local ones. Let us consider four scenarios. In the first instance, the firm can

⁹ The journal can be accessed using the following link: <https://www.law.com/americanlawyer/>

¹⁰ Note that it would be interesting to further understand what drive prices down: is there a reputational cost incurred by offshoring/automating and/or is this because offshoring/automating generates an excess in labor supply?

¹¹ Note that if the study pertains to management consulting practices, this sub sector of the professional services industry shares many similarities with law firms. This makes it a suitable proxy to draw benchmarks from. For example, several large consulting firms (e.g. Big 4) have a legal business unit as well as a pure management consulting one.

displace an extra 1% of labor per year off/near-shore, in the second 3%, in the third 5%. In the fourth scenario, the firm does not displace work (scenario 4 therefore serves as a reference point). Given that the firm does not currently displace labor, this would mean that for it to displace the 12% of lawyers' activities, it would take 12 years in the first scenario, 4 in the second, less than 3 in the third instance.

The transformation's consequences, highlighted in figure 4, are interesting. The associated chart indeed shows that if the transformation is fast enough, it can yield a profitability increase over the short run (scenario 2 & 3), but that as soon as it stops, competition keeps driving a profitability erosion. Besides, the example also highlights that a slow change does not generate enough costs savings to prevent a decline in profitability (scenario 1). The example therefore illustrates that displacing labor appears more of an instrument used to ensure firms' long-term survival and that it can only result in some short-term performance boost in specific cases. Additionally, this potential performance boost is small (2 to 3% with the data leveraged in the example). Thus, off/near-shoring may only be an instrument of interest for firms above a certain size threshold as driving the change will require some resource and will come with some level of costs. For instance, if one employee is needed to drive the change, say with a cost of say 120k\$ per year, a firm can only start displacing work if it generates more than 4 to 6 M\$ of revenue per year (otherwise the costs associated to the transformation out weight its benefits). Note that this question of threshold could also benefit from some further research.

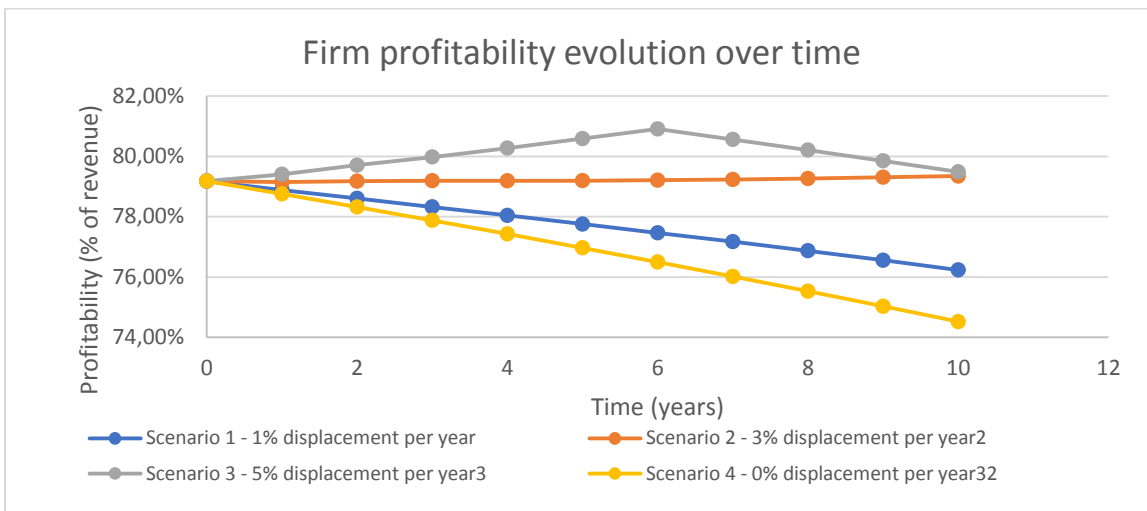


Figure 4 - Profitability evolution of a legal practices under diverse transformation speeds

Outside of consequences on legal practices' performance, the transformation highlighted in this article is also bound to lead to modifications in terms of how employees are compensated and incentivized (micro-economic/firm level considerations) as well as to have an impact on the overall local employment in the sector (macro-economic level considerations).

From a micro-economic perspective, the transformation may have an impact on the standard hierarchical career in place in the legal industry (i.e. the "up or out" where junior employees strive to succeed an existing partner in a legal practice). First, the sustainability of the model would have to be verified (perhaps through a discussion like the one of (Ribes 2020)). Second, it would be interesting to have empirical data assessing whether such changes have an impact on local workers' compensation.

Recent theoretical discussions indeed pointed out that it may not lead to major change in salaries¹², but it could be worth verifying the order of magnitude here. Finally, it would be worth further investigating the effect the change has at the beginning and the end stages of legal careers. For junior workers, it could be interesting to review to which extent entry screening mechanisms change or if there is change in competencies required to enter the labor market. Note that the need to further understand firm's screening mechanism is a topic regularly highlighted by the literature revolving around personnel economics (Lazear 1999). This could indeed be useful for junior workers as well as for the educational system. But it could be useful to understand how legal careers are initiated, it could also be of interest to understand what's happening at the end of the legal professional journeys. Is becoming an equity partner at a law firm still the goal of such careers? Is there landing ranks appearing? Is even the partnership model still relevant (Greenwood et Prakash 2017)?

But the usage of a multi local service delivery model and of digital tools also calls for a discussion beyond the one around the adaptation of standard firms' managerial practices. Overall, displacing or replacing work reduces the need for local labor. It would therefore be of interest to further understand the levers of growth in the legal industry and review how the speed of the transformation impacts employment. The growth (revenue wise) of the industry indeed implies that the need for labor increases. But on the other hand, the transformation is about reducing the reliance of firms on local employees. So will the transformation may translate in a slower employment growth or will it even lead (temporarily if not over the long run) to a decline in employment.

VI. Conclusion:

This article has shown that a large portion of activities in the legal industry could be done remotely and that if digital tools do not replace legal labor at scale, they could rather complement it. This means that if legal practices will undergo a transformation over the course of the following years, it is not going to be as drastic as previously highlighted by the literature. The activities done by lawyers, paralegals and legal secretaries are indeed interlinked and quite often not separable. As a result, only 30% (resp. 7.6%) of the tasks done by lawyers (resp. paralegals) could actually be off/near-shored. Finally, the article shows that getting the wrong scope when transforming a legal firm may result in a significant loss in terms of performance (up to 20% of cost increase). Caution is therefore required when transforming to improve competitiveness.

¹² The main source of variation appears to be the partnership structure of the legal firm and relates to the chances incumbents have to succeed an existing partner.

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