



**HAL**  
open science

# What is the impact of introducing productivity tools for wealth management professionals? A case study for the french market

Edouard Augustin Ribes

## ► To cite this version:

Edouard Augustin Ribes. What is the impact of introducing productivity tools for wealth management professionals? A case study for the french market. 2021. hal-03494465

**HAL Id: hal-03494465**

**<https://hal.science/hal-03494465>**

Preprint submitted on 19 Dec 2021

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

# What is the impact of introducing productivity tools for wealth management professionals?

A case study for the french market.

Edouard Augustin Ribes<sup>1</sup>

<sup>1</sup>CERNA, Mines Paristech\*

December 19, 2021

This paper models the economic structure of the services provided by wealth management professionals. It offers a view on the transformation of the associated market when new productivity tools (i.e. digital robots) are introduced. Core insights are generated by calibrating the model to data from the French market.

Key results are three fold. First, in the case of France, wealth management services are currently limited to individuals with more than 1.5M€ of assets. For those services to be democratized and extended to the entire population, the model suggests that 60%+ of today's activities in the profession must be automated. Second, wealth management services have currently an average cost of 500€ per client. The model then predicts that for every percent of activity automated via the introduction of productivity tools, services prices are reduced by about 4 to 5€. Finally, the model highlights that the introduction of new tools is likely to trigger an increase in demand for wealth management professional over the short run. This holds true until their services gets extended to the general population, point at which, the number of professionals needed will drastically reduce.

**Keywords.** Wealth, technological change, financial services.

**JEL.** D31,L84,O33.

---

\*Contact: edouard-augustin.ribes@mines-paristech.fr

# 1 Introduction:

Wealth management services consist in providing financial advice & solutions to individuals<sup>1</sup>. Advice generally belongs in one of three core categories. First, recommendations can be around planning for the transmission of an individual's assets to his/her children. This represents about 40% of the cases presented to wealth management professionals. In this case, typical client profiles consist of wealthy (i.e. 1.5 – 2M\$+ worth of assets) individuals who just retired (i.e.  $\approx$  65 years old). But nowadays most clients seek guidance with respect to either the preparation of their retirement or with respect to specific insurances related to a likely loss of income due to unemployment or an accident.

Those later two themes are becoming more and more prominent in western countries because of two major societal trends. First, western societies are ageing. U.N forecasts indeed show that by 2050, the ratio of retirees to active workers in mature countries will be of 1 to 2 (versus the current 1 to 4 ratio). The consequence is that state funded pensions programs will be unable to offer the same level of replacement rates as the ones currently in place. For instance, today, individuals in western societies get, on average, 0.6\$ when retired through public pension schemes for every 1\$ they have earned while active. By 2050, the same individual profile is more likely to get 0.3\$ when retired (Ribes, 2021). The situation is known and states have started to create financial incentives (notably under the form of income tax rebates) for individuals to invest in private pension schemes. However those incentives can be complex and individuals need to be guided through the change. That is where wealth management professionals play a key role: their knowledge of the financial system (and the associated incentives) is here to help individuals achieve an optimal preparation.

Second, western societies are experiencing a change when it comes their relationship to labor. The rise of digital technologies and their usage to automate activities indeed creates (micro-)firms structure where labor is allocated to a very reduced number of individuals / entrepreneurs. Those individuals are firm owner rather than salaried employees. As a result, the risk associated to firm failure and loss in income becomes more important for those individuals. This holds especially true as firm ownership does not come with the same level of social protection as a salaried status. Firms owners have limited to no insurance in case of unemployment due to firm failure, nor do they have coverage in case of an accident which would reduce their abilities. Consequently, states have started to create financial incentives to nudge those individuals into getting a coverage which is on par with the one of salaried employees. However the complex nature of those incentives requires professional advice so that individuals can make informed decisions. This is also where wealth managers play a role.

The current challenge faced by western societies pertains to the access individuals have to those services and the associated professionals. If the services could benefit the whole population, the productivity of professionals and their price tag is still calibrated

---

<sup>1</sup>Advice is indeed implemented through the subscription by the client to one or several products

for a clientele of wealthy individuals whose support need are traditionally been around organising their succession. Digital technologies have therefore a important role to play (see [Susskind and Susskind \(2015\)](#) for a recent discussion). By automating as many tasks as possible, technology could help boost the productivity of wealth managers, lower the price tag of their services and democratize their offering. To my knowledge, this transition is however not well understood. This is thus a gap that this paper will attempt to bridge. To do so, this article first offers a model depicting the current economic structure of the wealth management market in section 2.1. The model then gets calibrated to data stemming from France, which is one of the top 10 financial market for those types of services across the world. The model is then extended in section 3.1 to showcase the impact of automating activities via digital technologies. Forecasts in terms of the democratisation of the associated services are then discussed in the case of France. A short conclusion then summarizes the key results of this paper.

## 2 Modeling the wealth management market.

### 2.1 Market structure.

In modern societies, empirical evidences ([Levy and Solomon, 1997](#); [Drăgulescu and Yakovenko, 2003](#); [Yakovenko and Silva, 2007](#)) have shown that populations are divided, wealth-wise, in two categories. On one hand, the vast majority of households (i.e. 95%+ of the population) have a wealth  $C$  below a certain threshold  $C_m$ . This segment has a relative financial literacy and wealth is distributed, amongst the constituent of the segment, in an exponential fashion. On the other hand, a small fringe of the population (i.e. the remaining 5%) has a higher level of wealth as well as a higher level of financial literacy. Wealth, in this portion of the population, is distributed according to a power law (of parameter  $\alpha > 2$  to ensure that the amount of wealth available in the society is finite). The number of households  $n(C)$  can therefore be depicted by the following equation:

$$n(C) = \begin{cases} n_0 \cdot e^{-\frac{C}{C_m}} & \forall C \in [C_0; C_T[ \\ n_0 \cdot e^{-\frac{C_T}{C_m}} \cdot \left(\frac{C}{C_T}\right)^{-\alpha} & \forall C \geq C_T \end{cases} \quad (1)$$

To help them manage their wealth, individuals can contract the service of one of the  $s$  local wealth managers for a price  $\theta$ . Those professionals provide investments recommendations based on their knowledge of local tax incentives. States indeed provide tax rebates on selected (financial) products to nudge the behavior of their constituents <sup>2</sup>. Based on those recommendations, individuals can yield an extra benefit of  $b$  per unit of capital invested.

---

<sup>2</sup>For example, in European states (e.g. France, Spain, Italy...) where public pension have traditionally been very generous (e.g. replacement rate around 60%), states have started to provide incentives for individual to invest in private pension scheme. The mechanism is simple: every \$ invested yields a reduction in income tax up to a certain yearly threshold. For instance, this means that individuals, whose income gets taxed at a 30% level, can, under certain conditions, generate an extra return of 30% on their investment

Each professional has an available time  $T$  per period and spends  $\tau$  units of time per clients. Assuming that the wealthier individuals are serviced first as they come with the highest revenue footprint <sup>3</sup>, the equilibrium between supply and demand yields that, beneath a certain level of capital  $C_{inf}$ , there is not enough providers for individuals to get some service.

$$\tau \cdot \int_{C \geq C_{inf}} \frac{n(C)}{C_0} \cdot dC = T \cdot s \quad (2)$$

**Proposition 1:** *The activity of wealth managers generates, at society level, a well fare of  $\Pi$ <sup>4</sup> such that:*

$$\begin{cases} \Pi(C_{inf}) = \frac{C_T^2 \cdot b \cdot n_0}{C_0} \cdot \frac{e^{-\frac{C_T}{C_m}}}{\alpha - 2} \cdot \left(\frac{C_{inf}}{C_T}\right)^{2-\alpha} & C_{inf} \geq C_T \\ \Pi(C_{inf}) = \frac{b \cdot n_0}{C_0} \cdot e^{-\frac{C_T}{C_m}} \left(\frac{C_T^2}{\alpha - 2} + C_m \cdot ((C_{inf} + C_m) \cdot e^{\frac{C_T - C_{inf}}{C_m}} - (C_T + C_m))\right) & C_{inf} < C_T \end{cases} \quad (3)$$

Given the way wealth is distributed, it comes that:

**Proposition 2:** *Calling  $N_B$  [resp.  $N_A$ ] the number of individuals who have a wealth above  $C_T$  [resp. between  $C_0$  and  $C_T$ ] <sup>5</sup>, the lowest level of capital required  $C_{inf}$  to benefit from wealth management services provided by the  $s$  local providers obeys:*

$$\begin{cases} C_{inf} = C_T \cdot \left(\frac{T \cdot s}{\tau \cdot N_B}\right)^{\frac{1}{-\alpha+1}} & s \leq N_B \cdot \frac{\tau}{T} \\ C_{inf} = -C_m \cdot \ln\left(\left(\frac{T \cdot s}{\tau \cdot N_A} - \frac{N_B}{N_A}\right) \cdot \left(e^{-\frac{C_0}{C_m}} - e^{-\frac{C_T}{C_m}}\right) + -e^{-\frac{C_T}{C_m}}\right) & s > N_B \cdot \frac{\tau}{T} \end{cases} \quad (4)$$

Besides, local providers have the choice between providing wealth management services or getting into another type of profession. Local professions have, on average, a productivity of  $\rho$ . For an individual to be interested in offering wealth management services to clients with a capital  $C_{inf}$ , their marginal productivity must be on par with the average local productivity (i.e.  $\rho \cdot \tau = \theta$ ). Moreover, for clients to maximize the society welfare, the maximum number of clients must benefit from the service, which yields that  $\theta = b \cdot C_{inf}$ . Leveraging proposition (2), then yields that:

**Proposition 3:** *The number of wealth management services provider in the market ( $s$ ) depends in the local productivity of individuals ( $\rho$ ):*

$$\begin{cases} s = \left(\frac{\rho \cdot \tau}{b \cdot C_T}\right)^{1-\alpha} \cdot \frac{\tau \cdot N_B}{T} & ; \rho \geq \frac{b \cdot C_T}{\tau} \\ s = \frac{\tau}{T} \cdot \left(N_B + N_A \cdot \frac{e^{-\frac{\rho \cdot \tau}{b \cdot C_m}} - e^{-\frac{C_T}{C_m}}}{e^{-\frac{C_0}{C_m}} - e^{-\frac{C_T}{C_m}}}\right) & ; \rho < \frac{b \cdot C_T}{\tau} \end{cases} \quad (5)$$

<sup>3</sup>Note that this is in line with the ideas of assortative matching which were first used to describe how couples are structured (Becker, 1973) and which were then extended to business situations (Shimer and Smith, 2000).

<sup>4</sup>Where  $\Pi = \int_{C \geq C_{inf}} \frac{b \cdot C \cdot n(C)}{C_0} \cdot dC$

<sup>5</sup> $N_B = \int_{C \geq C_T} \frac{n(C)}{C_0} \cdot dC$  and  $N_A = \int_{C \in [C_0; C_T]} \frac{n(C)}{C_0} \cdot dC$  ]

## 2.2 Example: the french wealth management market:

### 2.2.1 Model calibration:

According to the U.N, the French population is composed of roughly  $N_A + N_B \approx 43M$  of individuals (30M active workers and 13.4M of individuals who are retired) <sup>6</sup>. Besides, wealth is distributed, in France, in a fashion where 5% of the adults (i.e.  $N_B = 40.8M$ ,  $N_A = 2.2M$ ) have more than  $C_T = 1M\text{€}$  worth of assets and where very wealthy individuals are distributed according to a power law of exponent  $\alpha = 2$  (Clementi and Gallegati, 2005; Drăgulescu and Yakovenko, 2003; Jayadev, 2008).

Additionally, the french labor market is composed, according to the O.E.C.D, of activities yielding a productivity of  $\rho = 70\text{€}/h$  and is regulated for individuals to exert an annual effort worth  $T = 1750h$  <sup>7</sup>. From a wealth management standpoint, a recent study provided by Chazal (2020) shows that the French market is currently composed of professionals who service on average a portfolio of 250 clients. Each client then invests an average of 90k€.

Those data points can be used to infer that french wealth managers dedicate, on average,  $\tau = 7h$  of their time to an individual client. For wealth management to be competitive as a profession, this means that the associated services must generate a yearly revenue per client of  $\theta \approx 500/\text{client}$ . Looking at it from an intermediation costs standpoint, this means that wealth managers are compensated by keeping 10% of the dividends yielded by individuals' investment <sup>8</sup>.

### 2.2.2 Model results:

Looking back, at the model described in the previous subsection, it comes that:  $N_B = C_m \cdot n_0 \cdot (1 - e^{-\frac{C_T}{C_m}})$  and  $N_A = \frac{n_0 \cdot e^{-\frac{C_T}{C_m}}}{\alpha - 1}$ . This can be used, based on the previous estimates, to infer the value of  $C_m$ . In the French context,  $C_m$  is worth  $\approx 230k\text{€}$ . Thus, for wealth management services to be extended to the general population, there must be more than  $N_B * \tau / T \approx 163k$  wealth managers.

Financial advice is regulated activity by the F.M.A (French Market Authority). Looking at the associated records, it appears that, in France, the number of individuals who have a licence to provide financial advice was of  $s \approx 70000$  in 2020. The model therefore implies that for local French nationals to benefit from the services of a wealth manager, they must have a minimum wealth of  $C_{inf} \approx 2.2M\text{€}$ . Moreover, to recoup the costs of the wealth manager (i.e.  $\theta = 500\text{€}$ ), individuals must therefore invest about 1.5k€ per year.

---

<sup>6</sup>Note that in this case, the focus is on individuals who can potentially benefit from wealth management services. Children are therefore excluded.

<sup>7</sup>This roughly corresponds to individuals working 40h per week and having 2 months of paid vacation per year.

<sup>8</sup>The underlying assumption here is that investments are based on financial products whose return is similar to equities (i.e.  $\approx 5\%$  per year). The overall intermediation costs for end customers would therefore be around 0.5%. This is on par with benchmarks such as the one of Philippon (2016), who reported intermediation costs of 1 to 2% in the financial services realm.

The results provided by the model yield two interesting insights. First, it shows that wealth management services are currently limited to the top 1-2% (wealth wise) of the population. Besides, given the associated costs, there is ample room to extend the customer base for those services. Second, the model shows that, right now, wealth management services are structured (according to 3) to yield a benefit of  $b \approx 36\%$  on the investments of individual clients. As a reference point, french individuals who earn more than 30k€ per year are subject to an income tax of 30% to 40% and wealth management advice is essentially of a fiscal nature. Wealth management can therefore be perceived nowadays as a profession whose role is to broker state/nation-wide relevant investments which grant investors an exception on their income tax.

### 2.2.3 Sensitivity analysis:

The findings described in section 2.2.2 (i.e. values of  $C_{inf}$  and  $b$ ) depend in a couple of parameters which were extracted from previous studies. To assess their robustness, a two steps sensitivity analysis was performed.

First, the impact of changes in the distribution of wealth within France was tested. This was done by changing  $\alpha$  and  $C_T$ . Increasing the skewness of the tail of the wealth distribution (i.e.  $\alpha$ ) did not change the results drastically. As long as  $\alpha$  is in the regions reported within the literature (i.e.  $\alpha \in [2; 3]$ ), the benefits of wealth management services remain in the range of the income tax (i.e.  $\approx 30 - 40\%$ ) and the minimum amount of wealth required to benefit from such services remains in the  $C_{inf} \approx 1.5 - 2M€$  range. Similarly, changing  $C_T$  by a couple of hundred thousands euros (i.e. +/- 1-500k€) does not yield any major differences on the order of magnitudes presented in the previous subsection.

Second, the impact of productivity changes on the model was assessed. If changing the overall productivity of alternative professions (i.e.  $\rho$ ) does not change the minimal wealth required to benefit from wealth management services, it changes the benefits individuals get from the scheme. In the proposed framework, for every percent gained in productivity across other occupations in France, the benefits  $b$  of leveraging wealth management services for french nationals increase by 0.36%. Similarly, if reducing the time required to provide advice to a client (i.e.  $\tau$ ), does not translate in increased benefits for end customers, it improves the coverage of services (i.e.  $C_{inf}$ ). Reducing the amount of time required to service a French client by 1h indeed reduces the minimum amount of wealth required to benefits from such services by 300k€. Increasing French wealth managers productivity could therefore prove very beneficial to extend the associated services to the entire society. This will be further discussed in the next section by adjusting the model to account for the introduction of (digital) robots.

### 3 Modeling the introduction of a new productivity enhancing technology.

#### 3.1 Labor structure:

The activity of a wealth manager can be divided in two buckets. A first portion  $\phi$  of the time  $\tau$  spent by a professional for a client consists of activities which can be automated. The rest is made of interactions which can not be scripted (e.g. face to face meetings etc...). Assume that the activities which can be automated are ordered according to their importance and assume that the importance of a task  $n$  versus a task  $n + 1$  differ by a ratio  $\psi < 1$  (i.e. the  $n$  the task represents a time of  $\phi \cdot \tau \cdot (1 - \psi) \cdot \psi^n$  per client) (see [Stinebrickner et al. \(2019\)](#) for a recent discussion). In this framework, after having automated task 1 to  $n$ , the time spent by a wealth manager for a client  $\tau_n$  follows:

$$\tau_n = \tau \cdot (1 - \phi(1 - \psi^n)) \quad (6)$$

Automation can be done by a third party so as to mutualize the costs required to develop the associated technology. The costs incurred by the technology provider are assumed to be stable at activity level and worth  $\beta$  ([Jones, 2005](#))<sup>9</sup>. Additionally, prior technology has to be maintained. This means that for every \$ invested in the past, an amount  $\gamma \in [0; 1[$  has to be allocated for maintenance purposes. The resulting framework is that the cost  $\nu_n$  incurred by the technology provider after having automated activity 1 to  $n$  obeys:

$$\nu_n = \frac{\beta}{1 - \gamma} \cdot (1 - \gamma^n) \quad (7)$$

As seen in the sensitivity analysis developed in section 2.2.3, introducing a technology boosting the productivity of wealth manager has an impact on the local market. It indeed lowers the minimum amount of wealth local individuals need to access those services. Additionally, it triggers an evolution of the number of wealth managers required to service the market place. As a result, the overall well-fare of the society ( $\Pi$ ) increases. Once activities 1 to  $n$  have been automated, the number  $s_n$  of wealth managers required locally is therefore given as:

$$\begin{cases} s_n = \left( \frac{b \cdot C_T}{\rho \cdot \tau \cdot (1 - \phi(1 - \psi^n))} \right)^{\alpha-1} \cdot \frac{\tau \cdot (1 - \phi(1 - \psi^n)) \cdot N_B}{T} & ; \rho \geq \frac{b \cdot C_T}{\tau \cdot (1 - \phi(1 - \psi^n))} \\ s_n = \frac{\tau \cdot (1 - \phi(1 - \psi^n))}{T} \cdot \left( N_B + N_A \cdot \frac{e^{-\frac{\rho \cdot \tau \cdot (1 - \phi(1 - \psi^n))}{b \cdot C_m}} - e^{-\frac{C_T}{C_m}}}{e^{-\frac{C_0}{C_m}} - e^{-\frac{C_T}{C_m}}} \right) & ; \rho < \frac{b \cdot C_T}{\tau \cdot (1 - \phi(1 - \psi^n))} \end{cases} \quad (8)$$

This means that if, in the absence of technology, wealth management services are limited to the wealthier part of the population (i.e.  $\rho \geq \frac{b \cdot C_T}{\tau}$ ), the introduction of automation can trigger a commoditization of the service via its extension to the general population.

This occurs when  $\bar{n} = \frac{\log\left(\left(1 - \left(1 - \frac{b \cdot C_T}{\tau \cdot \rho}\right) \cdot \frac{1}{\phi}\right)\right)}{\log(\psi)}$  activities get replaced.

For the system to be viable (i.e. for the technology provider to survive and for the maximum number of wealth managers to adopt its solution), the revenue generated

<sup>9</sup>This revolves around assuming a Leontiev type of technology



by the technology must meet the associated development costs. In a context where there is  $s_n$  wealth managers, the unit price of the technology  $I_n$  is therefore given as  $I_n = \frac{v_n}{s_n}$ . Similarly, the price of wealth management services  $\theta_n$  is updated for every task automated to ensure that the productivity (adjusted to account the costs of the technology) of the associated workers is on par with the rest of the economy (i.e.  $\rho \cdot \tau_n = \theta_n - I_n \cdot \frac{\tau_n}{T}$ ):

$$\theta_n = \rho \cdot \tau \cdot (1 - \phi(1 - \psi^n)) + \frac{\beta \cdot \tau}{1 - \gamma} \cdot \frac{(1 - \gamma^n) \cdot (1 - \phi(1 - \psi^n))}{s_n \cdot T} \quad (9)$$

**Lemma 1:** *As long as the productivity of wealth managers is above average  $\rho \leq \frac{b \cdot C_T}{\tau}$ , automation further increase the efficiency of the profession and its contribution to the welfare of the society (i.e.  $\Delta_n \Pi(C_{inf,n}) > 0$ ). At equilibrium, it is therefore welfare optimal to automate the entire portion  $\phi$  of activities which can be replaced by a piece of technology.*

**Proposition 4:** *Assuming that  $\rho < \frac{b \cdot C_T}{\tau \cdot (1 - \phi)}$ , the total number of wealth managers at equilibrium (i.e. when all tasks are automated, which is represented by the superscript  $\infty$ ) is:*

$$s_\infty = \frac{\tau \cdot (1 - \phi)}{T} \cdot (N_B + N_A \cdot \frac{e^{-\frac{\rho \cdot \tau \cdot (1 - \phi)}{b \cdot C_m}} - e^{-\frac{C_T}{C_m}}}{e^{-\frac{C_0}{C_m}} - e^{-\frac{C_T}{C_m}}}) \quad (10)$$

**Proposition 5:** *At equilibrium (i.e.  $n \rightarrow \infty$ ), the price of the technology  $I_\infty$  follows:*

$$I_\infty = \frac{\beta}{(1 - \gamma) \cdot \frac{\tau \cdot (1 - \phi)}{T} \cdot (N_B + N_A \cdot \frac{e^{-\frac{\rho \cdot \tau \cdot (1 - \phi)}{b \cdot C_m}} - e^{-\frac{C_T}{C_m}}}{e^{-\frac{C_0}{C_m}} - e^{-\frac{C_T}{C_m}}})} \quad (11)$$

## 3.2 Example: automation in the french market.

### 3.2.1 Model calibration:

The extended model described in section 3.1 accounts for potential labor replacement opportunities that may exist in the wealth management space. At a high level, a preliminary sizing of those opportunities has already been reported within the academic literature. According to experts (Arntz et al., 2016; Frey and Osborne, 2017), about  $\phi \approx 60\%$  of the associated activities could indeed be automated.

When it comes to the detailed occupational structure of wealth management roles, a proxy can be found in the North American classification systems and notably the O\*Net records provided by the US bureau of labor for financial advisors. Those records have recently gained traction across the economic community to assess the impact of technological change on labor markets. Amongst the associated studies, the recent empirical work of Stinebrickner et al. (2019) offers a view on the distribution of activities amongst jobs. It notably shows that in occupations with a high level of information related tasks (which can be used as a proxy to describe the activities of wealth managers), activities

are distributed in an exponential fashion with  $\psi = 0.15$ . Note that given the directional nature of the estimates found for  $\psi$  and  $\phi$ , a sensitivity analysis will be performed in one of the following subsections.

Benchmarks are however lacking when it comes to estimating the costs of developing a digital robot to automate activities in the wealth management space. But some information can be found here and there in the literature. For instance, some studies such as the ones of [Whelan and McGrath \(2002\)](#) or [Saarti \(2003\)](#) record that the maintenance costs of digital applications are in the  $\gamma \approx 20 - 30\%$  range. But the real difficulty is about assessing the development costs  $\beta$  of such technology. Reports can indeed widely vary depending in the nature of the automation. Reports in the banking industry (see [Bahl \(2012\)](#)) show development costs  $\beta$  being in the range of several  $k\text{€}$  but also potentially increasing to several  $M\text{€}$ . This will be therefore further discussed through a sensitivity analysis.

### 3.2.2 Model results & additional comments:

Once calibrated with the data elements depicted in the previous subsections, the adjusted model generates three main insights (see Figure 1). First, it shows that, when the amount of activities that can be replaced by technology is above  $\phi \approx 60\%$ , the number of wealth managers at equilibrium (i.e.  $s_\infty$ ) starts to decline compared to what can be observed today (i.e.  $s_\infty < 70k$ ). Second, as soon as automation reaches the  $\phi \approx 60\%$  milestone, all the population starts to benefit from the associated services, services start to be extended to the general population (i.e.  $C_{inf} < C_T$ ). Finally, the price  $\theta_\infty$  of wealth management services decreases almost linearly with the progressive implementation of a new (digital) technology: for every percent of tasks which gets automated, prices decrease by about 4 to 5€.

Note that the previously described evolution is impacted by the shape of the wealth distribution amongst wealthy individuals (i.e.  $\alpha$ ). The more the wealthier individuals possess (i.e. the higher  $\alpha$ ), the more they get attention from service providers. As a consequence, when  $\alpha > 2$ , automation triggers an increase in the number of professionals until the service reaches the general population. It also triggers a more rapid democratization of the service. The amount of automation required to start extending wealth management advice to the general population indeed decreases (e.g. for  $\alpha = 2.5$ , democratization is triggered for  $\phi \approx 45\%$ ). This is depicted in Figure 2.

Now, price-wise, assume that the tool provider has access to all the wealth managers and that automating  $\phi = 60\%$  of their activities requires an investment of  $\beta = 10M\text{€}$ . In this case, the associated productivity tools are offered at a price  $\theta_\infty \approx 170\text{€}/\text{year}$ . This price tag is of course sensitive to a number of parameter. First, it depends in the maintenance costs associated with the technology. When maintenance costs increase, for instance from  $\gamma = 20\%$  to  $30\%$ , prices rise from  $170\text{€}/\text{year}$  to  $200\text{€}/\text{year}$ . Second, prices depend in the number of potential customer for the tool. As the number of wealth managers remains constant (i.e.  $\alpha = 2$  and  $\phi \in [0; 60\%]$ ), prices remain unchanged. However as soon as the number of professionals starts to shrink because of the increase in productivity enabled by the technology, prices go up. Finally, technology prices are

dependent in the number of providers who compete in the market. In this model, the assumption is that only one firm is offering such services. But if multiple firms were attempting to offer tools to wealth management professionals, prices would have to go up. Production costs can not be compressed, while the overall number of potential customer would go down. As a result, if multiple firms with different production costs  $\nu$  were to compete for the same professionals, the equilibrium price would be revised up. This could constitute the subject of future discussions.

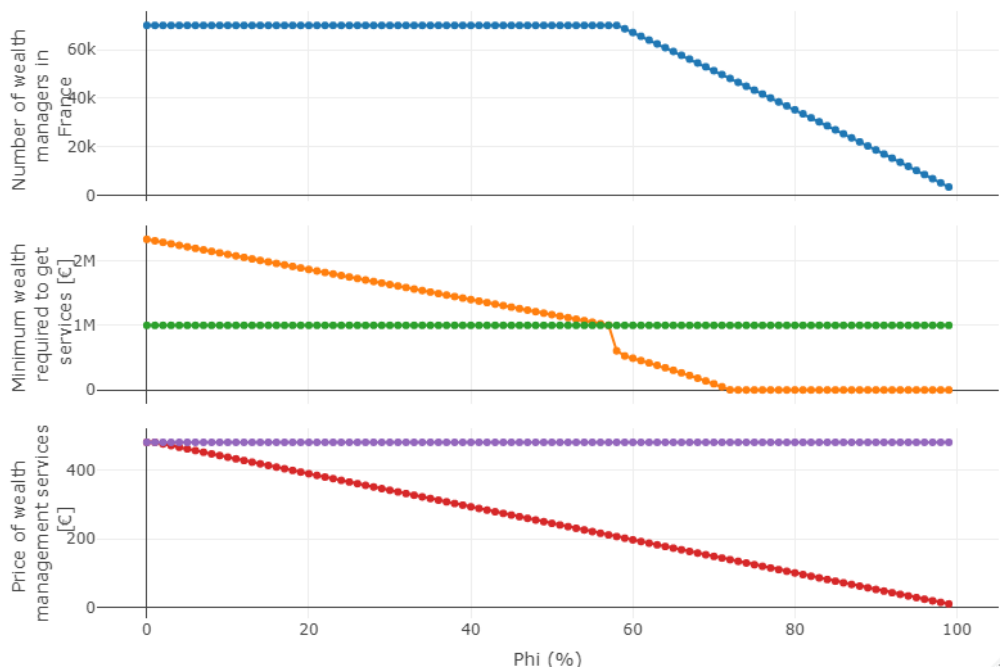


Figure 1: Impact of automation technology on wealth management services in France ( $\alpha = 2$ ).

## 4 Conclusion:

This article offers a simple model describing the economics of wealth management services. It is calibrated to depict the structure of the current French market. The model shows that, as of today, wealth management services are limited to wealthy french individuals who possess more than 1.5M€ worth of assets. Each client pays on average 500€/year per unit of service. Services are currently offered to less than 5% of the current french population.

This market could benefit from the introduction of (digital) productivity tools. Automating more than 60% of the associated activities would indeed enable the full democratisation of those services (i.e. services would be cheap enough to benefit the whole french population). As a reference point, automating 1% of activity translate in a price reduc-

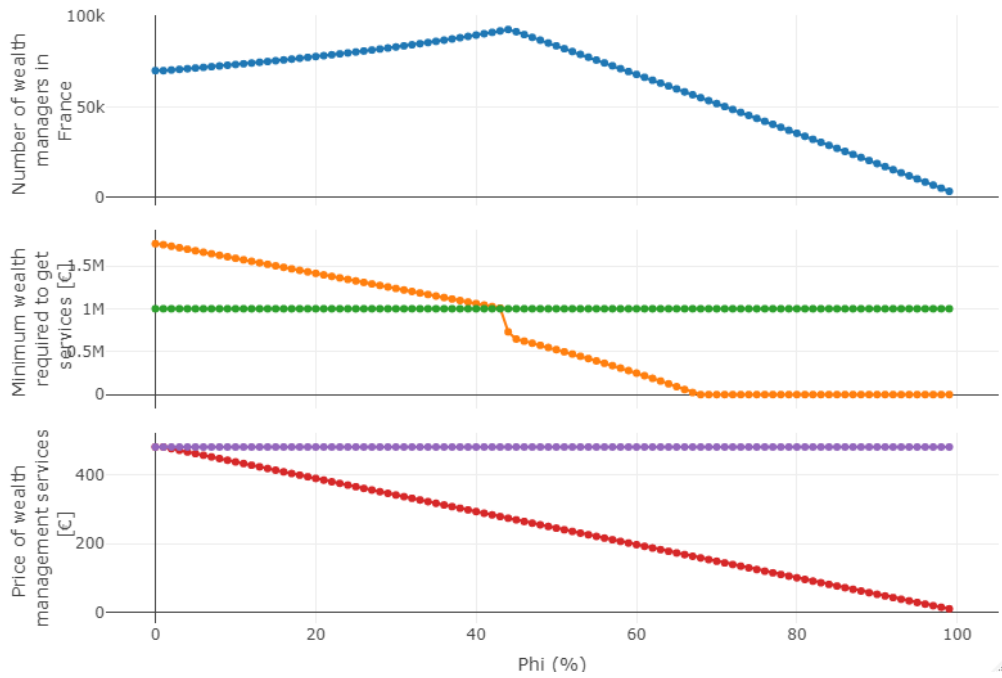


Figure 2: Impact of automation technology on wealth management services in France ( $\alpha = 2.5$ ).

tion of 4 to 5€ per client.

Automating a large amount of activities is likely to take time. The transformation of the wealth management industry is thus likely to be a decade long story. The model proposed in this paper shows that this evolution is likely to happen in two waves. First, until services get democratized, the number of wealth managers in France will likely stay the same if not increase. But then, as soon as technology has a large enough footprint/penetration to extend wealth management services to the general population, the number of professionals required to support the market will shrink.

From my perspective, additional discussions would be needed to understand how competitive this type of market is for technology providers.

## References

- Arntz, M., T. Gregory, and U. Zierahn (2016). The risk of automation for jobs in oecd countries: A comparative analysis.
- Bahl, S. (2012). E-banking: Challenges & policy implications. *International Journal of Computing & Business Research*, 229–6166.
- Becker, G. S. (1973). A theory of marriage: Part i. *Journal of Political economy* 81(4), 813–846.
- Chazal, Y. (2020). Les cgp : architectes de l'épargne financière des français. Technical report.
- Clementi, F. and M. Gallegati (2005). Pareto's law of income distribution: Evidence for germany, the united kingdom, and the united states. In *Econophysics of wealth distributions*, pp. 3–14. Springer.
- Drăgulescu, A. A. and V. M. Yakovenko (2003). Statistical mechanics of money, income, and wealth: a short survey. In *AIP Conference Proceedings*, Volume 661, pp. 180–183. American Institute of Physics.
- Frey, C. B. and M. A. Osborne (2017). The future of employment: How susceptible are jobs to computerisation? *Technological forecasting and social change* 114, 254–280.
- Jayadev, A. (2008). A power law tail in india's wealth distribution: Evidence from survey data. *Physica A: Statistical Mechanics and its Applications* 387(1), 270–276.
- Jones, C. I. (2005). The shape of production functions and the direction of technical change. *The Quarterly Journal of Economics* 120(2), 517–549.
- Levy, M. and S. Solomon (1997). New evidence for the power-law distribution of wealth. *Physica A: Statistical Mechanics and its Applications* 242(1-2), 90–94.
- Philippon, T. (2016). The fintech opportunity. Technical report, National Bureau of Economic Research.
- Ribes, E. (2021, January). What are the financial implications of an ageing population for European citizens? working paper or preprint.
- Saarti, J. (2003). The acquisition and maintenance costs associated with library automation systems in finnish public libraries. *Program*.
- Shimer, R. and L. Smith (2000). Assortative matching and search. *Econometrica* 68(2), 343–369.
- Stinebrickner, R., T. Stinebrickner, and P. Sullivan (2019). Job tasks, time allocation, and wages. *Journal of Labor Economics* 37(2), 399–433.

- Susskind, R. E. and D. Susskind (2015). *The future of the professions: How technology will transform the work of human experts*. Oxford University Press, USA.
- Whelan, E. and F. McGrath (2002). A study of the total life cycle costs of an e-commerce investment. a research in progress. *Evaluation and Program Planning* 25(2), 191–196.
- Yakovenko, V. M. and A. C. Silva (2007). Two-class structure of income distribution in the usa: Exponential bulk and power-law tail. In *Topological Aspects Of Critical Systems And Networks: (With CD-ROM)*, pp. 49–58. World Scientific.