

Wealth Tax & Entrepreneurship

Major Research Paper

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Abstract

In a time of increasingly growing income inequality and a shrinking middle class, many governments are proposing redistributing wealth using a personal wealth tax. The wealth inequality has further been exasperated by the COVID-19 pandemic resulting in loss of employment. Wealth inequality is far greater than income inequality as wealth accumulation operates in a self-reinforcing way and likely to increase in the absence of taxation. Investment returns tend to increase with wealth and high earners can save more due to their lower marginal propensity to consume. Governments globally have responded to the crisis through stimulus packages which resulted in an increased budget and government deficit to keep the country's economy from falling into an economic collapse (i.e., a recession or stagflation). This has resulted in ballooning government deficits and a response from governments to find avenues to fund the increased budgets. The wealth tax is a tool that is proposed by politicians to raise tax revenues considering the growing deficit and expanding budgets. While the tax system should help address wealth inequality, the question is whether the wealth tax is the most effective way to do so. This study will examine the impact of a wealth tax adopted by countries and entrepreneurial activity in the country. Will a wealth tax be more beneficial or harmful to a country's entrepreneurship size? The findings from the longitudinal study showed mixed results as to whether a wealth tax had a negative or positive impact on entrepreneurship. Four main indices which the study found had an interesting relationship with wealth tax were 1) Self-Employed with and without employees, 2) Self-Employed Manufacturing versus Services sector, 3) Self-Employed Youth rates for men versus women, and 4) Self-Employment rates for men versus women. The case event study has also shown that a wealth tax may not be all beneficial and resulted in France repealing their wealth tax.

Introduction and Objectives

The principle of taxation should promote growth, and entrepreneurship is a key component in innovation and increased productivity, which is an important element of long-term growth of a country. It is also widely held that there is a strong link between entrepreneurship and growth. Capital and labor alone cannot explain growth, but talent is required combined with knowledge to create value. The impact of tax on growth would depend partially on the taxation on entrepreneurship (Hansson, 2008). This paper argues that implementation of a wealth tax is likely to have a slight negative effect on overall Self-Employment rates, Self-Employment in manufacturing, and Self-Employment rates – Self-Employed without employees. The wealth tax is likely to have a slight positive effect on Self-Employed youth ages 20-29 rates, Self-Employment in services, and Self-Employment rates – Self-Employed with employees. The wealth tax has no effect on the number of new firms and gross fixed capital formation (investment) in a country.

An entrepreneur is qualified as any market participant whose actions are guided by the perception of a profit opportunity, which emerge when allocation of efforts in the economy are sub-optimal given available knowledge. Entrepreneurship, the perception and taking advantage of profit opportunities, is a vital variable for growth by finding better and smarter ways of allocating resources (Meh, 2003).

Entrepreneurial activity plays a vital role in the creation of jobs and employment in the country, and promotes innovation and market growth, all of which enhances economic growth in the country and increases the country's tax base. Innovation has also been shown to be an important engine of long-term growth and development. A precondition for directing entrepreneurial talent towards the market is the availability and presence of profit opportunities and the size of the

opportunities. This requires that the market functions properly to promote economic activity. Innovation takes place in settings where entrepreneurship is growing and active, which would require that the impact of the tax structure on entrepreneurship be considered for there to be a suitable environment in the place of business. Variables that may weaken the market include regulatory invasion, tariffs, or legal uncertainty which may diminish entrepreneurial activity (Baliamoune-Lutz & Garelo, 2014).

From a 2018 OECD report entitled “The Role and Design of Net Wealth Taxes in the OECD”, it was found that Net Wealth taxes were far less widespread, while 12 countries had net wealth taxes in 1990, there were only four OECD countries that still levied recurrent taxes on individuals’ net wealth in 2017. A wealth tax is defined as a tax imposed on an individual’s net wealth, or the market value of their total owned assets minus liabilities. Decisions to repeal net wealth taxes have been justified by efficiency and administrative concerns and by observation that net wealth taxes have frequently failed to meet their distributive goals. The revenues collected from net wealth taxes have also been very low. The report found that there are strong arguments for having a net wealth tax in the absence of broad-based personal capital income taxes and taxes on wealth transfer. Where the overall tax burden on capital is low, or inheritance taxes or levying capital income taxes is not feasible, net wealth taxes may play an important substitution for taxes on personal capital income on capital gains or wealth transfer.

The findings from this research will provide governments and heads of states some insights to the potential impact of wealth tax on countries’ entrepreneurship. The research, however, is not specific to the context of each of the countries studied and may not consider many other factors that may impact entrepreneurship levels in a country as well as the overall tax morale of a country. It may not be possible to assess the wealth tax in isolation but would depend on a

country's overall tax system and broader economic and social circumstances. For example, from previous OECD work, a net wealth tax may have more limited distortive effects and more justified to enhance progressivity in countries where the taxation of personal capital income is comparatively low, such as countries which do not levy taxes on inheritances or has no capital gains taxes. The research will contribute to the study of wealth tax and entrepreneurship by taking a closer look at the cause and effect the adoption and or abolishment of the wealth tax has on micro-level data on Self-Employment.

The study expands on Hansson's research on Wealth Tax and Entrepreneurship on how wealth tax affects entrepreneurship and will look at entrepreneurship key indicators such as risk-taking and effort. Hansson's research focused on 22 Organisation for Economic Cooperation and Development (OECD) countries and the share of Self-Employed (excluding farmers) was used, with data up to 2003 (Hansson, 2008). This research will expand Hansson's study to include the 22 OECD countries in addition to new countries that have joined the OECD since 2003 and include data from the OECD from 2010 to 2020 when available.

Hansson's study compared the change in Self-Employment before and after the removal of wealth tax. This study will expand and build on Hansson's study by using micro-level data to disentangle how the wealth tax affects Self-Employment which includes various indicators and indexes on starting a business from the OECD. The micro-level data in this research includes a subset of the "*Entrepreneurial Indicators*" which includes employees by business size, enterprises by business size, Self-Employed with employees, Self-Employed without employees, Self-Employment by activity, and young Self-Employed. The study will also explore how wealth tax affects Self-Employment by looking at the gross fixed capital formation defined as the

acquisition of produced asset. Lastly, the study will look at the number of new firms and self employment rates.

Research Question

Does the imposition of a wealth tax have a positive or negative correlation with entrepreneurship in a country?

This paper will first present the background to the study, followed by the literature review, continuing with the study methodology, data analysis and results, then discussion, and concluding by discussing the theoretical implications, limitations of the study and future research.

Literature review:

The role of government in creating its country's tax policy is shown to have influence on entrepreneurial activity. There are two main reasons that the wealth tax influences the chances of becoming an entrepreneur as discussed in Hansson's research. First, wealth tax influences occupational choice directly by negatively impacting the amount of funds available and limiting wealth accumulation which limits the amount of funds available for start-ups. Secondly, wealth tax affects the proportion of individuals with entrepreneurial vision by impacting their expected net profit (Hansson, 2008).

In the study, there were several reasons for wealth tax to negatively influence the probability of becoming an entrepreneur. First, because of the high risk and asymmetric information, it is difficult for start-up businesses to obtain external financing. Owning capital is paramount in staying successful as an entrepreneur and a wealth tax would reduce the amount of available capital. Second, expected income is also an important incentive for potential entrepreneurs and by decreasing expected returns through the wealth tax, there may be a negative impact for aspiring entrepreneurs to enter. noted that in the absence of the ability to incorporate, a progressive tax system discourages risk taking and hence reduces entrepreneurship, while neutral taxes (proportional tax system) encourage risk-taking. It was concluded that the relative neutrality of taxation on employees versus Self-Employment should be recognized (Hansson & Aavik, 2012).

In a study by Parker & Robson in 2004, it was found that Self-Employment rates are positively and significantly related to average income tax rates and negatively and significantly related to the benefit replacement rate. The findings suggest a stronger influence of government policy decision in the determination of cross-national variations in Self-Employment rates. Tax benefit

variables and female labor force participation rates were found to possess most of the explanatory power on variables co-integrated with Self-Employment rates in a panel of five countries (Parker & Robson, 2004).

There have been studies on the factors that are important for creating and maintaining entrepreneurial activity (Murphy et al., 1991; Schumpeter, 1934). One determinant that has been consistently found to be important is access to own capital. Few studies have focused on taxation; some studies have found a positive relationship between income tax rates and entrepreneurship (Parker & Robson, 2004; Schuetze, 2000), where higher income tax rates may give greater incentives to under report or re-classify taxable income done more easily for entrepreneurs than employees. The trends in male Self-Employment in Canada and the United States were also examined using micro data for the period 1983-1994 focusing on the role of taxes and economic situation. It was found that higher income tax and unemployment rates are positively correlated with an increase in rate of Self-Employment among North American men, (Schuetze, 2000).

In contrast, a negative relationship between tax rate progressivity and entrepreneurship was also found, because of tax progressivity reducing financial returns of entrepreneurship and therefore incentive for entry of prospective entrepreneurs (Gentry & Hubbard, 2000; Robson & Wren, 1999). Using country-industry level database with data on firm entry in 17 European countries between the period 1997-2004, the relationship between entrepreneurship, firm entry, and the taxation of corporate income was examined and found evidence in support of a negative effect of corporate income taxation on entry rates (Da Rin et al., 2011). Similarly, a study used Canadian micro-level data for the period 1990-1996 and found that a higher marginal tax has a negative

effect on the decision to be Self-Employed but found a positive effect from higher payroll taxes on employees (Stabile, 2004).

Another way of studying the impact of taxes on entrepreneurship is the type of tax. Cullen & Gordon studied the effect of taxes on entrepreneurship by focusing on the impact of various types of tax changes on the degree of risk-taking. They found that the nature of the impact of taxes on entrepreneurial risk-taking depends on the kind of tax, as there are several types of taxes that may affect entrepreneurship including personal income tax, payroll tax, capital gains tax, corporate income tax. They found that for example, allowing a deduction of business losses on the entrepreneur's personal income tax return would raise entrepreneurial risk-taking by 50-100%, whereas reducing personal tax rates by 5% points would reduce entrepreneurial risk-taking by about 40% (Cullen & Gordon, 2007).

Balioune-Lutz and Garelo examined the effects of taxation and tax progressivity on entrepreneurship in a large group of European countries and whether the tax increases discouraged entrepreneurial activity, focusing on new Self-Employment. The empirical results suggested that reducing tax progressivity within the range of high income would have a positive and significant effect on nascent entrepreneurship. They have suggested that the possible best strategy would involve more fiscal neutrality involving low progressivity or a flat tax to reduce the start-up costs and tax burden on entrepreneurs (Balioune-Lutz & Garelo, 2013).

In contrast, Bacher and Brulhart used Swiss micro-level data and examined the effect of corporate income tax schedule on firm births. They disentangle three effects: effect of the average level of taxation, effect of the degree of progressivity, and effect of the complexity of the system. They found that high average tax and complicated tax code reduces the rate of firm births, but progressivity can increase it (Bacher & Brulhart, 2010).

Progressive income taxes have been found to reduce incentives to become an entrepreneur, since business ownership promotes income growth and moves the agent to a higher tax bracket. A cut in the tax rate brought by the switch to proportional taxation relaxes the financial constraints of entrepreneurs and can operate their business with higher capital investment (Meh, 2003).

Similarly, another study examined the link between taxes and youth Self-Employment, where Egebark and Kaunitz made use of a Swedish reform implemented in 2007-09 which suddenly made the payroll tax and Self-Employment tax vary by age. The results showed that the tax cut caused Self-Employed individuals to allocate more time to Self-Employment – either by reducing time in leisure or in wage employment. The reallocation did not pertain to years when an individual no longer faced the lower tax rate (Egebark & Kaunitz, 2018).

Higher income taxes on households have been found to discourage employment and entrepreneurship rates discriminately among gender. In a study by the IMF on Gendered taxes: The interaction of tax policy with gender equality, the paper found that on labor taxation (employment income), household taxation discourages secondary earners (mostly women) from taking up employment as their combined income would result in a higher tax bracket and purchase household services with after-tax earnings. As a result, the secondary earner or spouse, would not work and perform household services (Klemm, Coelho, Osorio-Buitron, & Davis, 2022).

The reviewed literature offers mixed results; however, it tends to suggest that increased progressive taxes have a negative effect on entrepreneurship. Previous research has looked at the impact of wealth tax on entrepreneurship rates; however, the impact of wealth tax on various subset indices of entrepreneurship has not been studied. The research will explore more of these entrepreneurship indices – Self-Employment among youth, Self-Employment rate among different industries, or Self-Employment with or without employees – and the impact of a wealth tax on such indices.

Methodology

The research is quantitative in nature, focusing on Self-Employment and entrepreneurial indicators on countries with wealth tax. The research type utilized is descriptive research using secondary data. This is an exploratory study research using a systematic set of procedures to develop an inductively derived theory from the data. The exploratory study is aligned with the objective of this study, to explore the correlation between (personal) wealth tax and entrepreneurship.

The research will first explore which of the entrepreneurial indicators from the most recent year (2020) has a strong correlation with wealth tax. Tax on personal income (% of GDP) is used as a proxy for wealth tax as this data is available. The study will conduct a simple linear regression with the dependent variables being the indicators found to have a correlation and the independent variables being the Tax on personal income (% of GDP) of the OECD countries. The linear regression model will indicate which entrepreneurial indicators are statistically significant with the personal income tax indicated with a p-value greater than 5% and a T-value greater than |1.96|.

The research will then use a longitudinal study between 2010 to 2020 to look at the trends and differences between countries with wealth tax and without with respect to the statistically significant entrepreneurial indicators found in the linear regression model above. The study will compare the various entrepreneurial indicators of OECD countries that have wealth tax versus those without with their average respective entrepreneurial indices rates grouped by wealth tax countries versus non wealth tax countries. In the OECD data, the countries that collected revenues from net wealth taxes on individuals in 2020 are Colombia (starting 2019), France, Norway, Spain, Italy, Netherlands, Belgium (starting 2018) and Switzerland. France's net wealth tax was mostly repealed in 2018 and now only applies to real estate property. Colombia is currently operating a temporarily 1 percent tax on wealth for tax years 2019 through 2021.

Lastly, the study will also utilize a simplified event study, one year before and after on countries which have either adopted or repealed the wealth tax and the impact on entrepreneurial activities in the country in comparison with the other OECD countries without a wealth tax. A simple differences comparison on the entrepreneur indicators will be conducted to see the effect, if any, the wealth tax adoption, or abolishment has on entrepreneurship. The simplified event study will be conducted for Colombia comparing the indices in 2018 and 2020, the year before and after the adoption of the wealth tax in 2019. The event study will also be conducted for France in 2017 and 2019, the year before and after France abolished its net wealth tax in 2018 and replaced it that year with a real estate wealth tax.

Data Collection, Variables and Measures:

The data set used are the various entrepreneurship indices and Tax on personal income (% of GDP) from 2010 to 2020 from the OECD and new firms and GFCF data from 2010 to 2020 from the World Bank. The indices utilized in the study are briefly explained in the chart below.

Indices	Description
Tax on Personal Income (% of GDP)	Tax on personal income is defined as the taxes levied on the net income (gross income minus allowable tax reliefs) and capital gains of individuals. This indicator relates to government (all government levels) and is measured in percentage both of GDP and of total taxation.
Gross Fixed Capital Formation (investment)	Acquisition of produced assets (including purchases of second-hand assets), including the production of such assets by producers for their own use, minus disposals. The relevant assets relate to assets that are intended for use in the production of other goods and services for a period of more than a year.
Number of New Firms	This measures the number of newly registered companies with limited liability (or its equivalent), per calendar year.
Self-Employment Rate	Self-Employment is defined as the employment of employers, workers who work for themselves, members of producers' co-operatives, and unpaid family workers. This indicator is measured as a percentage of the employed population considered (total, men, or women).
Self-Employed with Employees (M/W)	Those who are Self-Employed with employees are people whose primary activity is Self-Employment and who employ others. The incorporated Self-Employed are only partly or non-included in the counts of Self-Employed in several countries.
Self-Employed without Employees (M/W)	Those who are Self-Employed without employees are people whose primary activity is Self-Employment and do not employ others. The incorporated Self-Employed are only partly or non-included in the counts of Self-Employed in several countries.
Self-Employment - Manufacturing (M/W)	The indicator is the number of Self-Employed men (women) in the manufacturing sector divided by the number of Self-Employed men (women) in all industries.
Self-Employment - Services (M/W)	The indicator is the number of Self-Employed men (women) in the services sector divided by the number of Self-Employed men (women) in all industries.
Self Employed - 20-29 (M/W)	For each group (men/women), the indicator is defined as the share of Self-Employed aged 20-29 among all employed workers aged 20-29 in this group.

1. Correlation Matrix

A Spearman Correlation Matrix was done with all the entrepreneurship indices for the OECD countries for the 2020 year with Tax on personal income (% of GDP shown) in *Figure 1* below. The determination of whether the correlation is significant or not is done with a T-Test in step 2 following the Spearman Correlation Matrix.

Figure 1: Correlation Matrix (Spearman)

Variables	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Tax on personal income	0.320	-0.374*	-0.501**	-0.423*	-0.491**	0.414*	0.242	0.128	0.168	0.182	0.029	0.528**	0.526**	0.030	-0.008
2. GFCF (investment)	1	-0.040	-0.456*	-0.398*	-0.402*	0.158	0.085	0.049	0.126	0.049	0.110	0.168	0.135	0.117	0.015
3. Number of New Firms		1	0.138	0.031	0.213	-0.412*	-0.348	-0.383*	-0.401*	-0.373*	-0.188	-0.404*	-0.378*	-0.258	-0.139
4. Self Employment			1	0.859**	0.926**	-0.239	-0.099	-0.073	-0.091	-0.208	-0.219	-0.395*	-0.413*	0.026	0.107
5. Self Employment (M)				1	0.932**	-0.188	-0.070	-0.027	-0.060	-0.172	-0.237	-0.385*	-0.382*	0.025	0.054
6. Self Employment (W)					1	-0.330	-0.206	-0.200	-0.200	-0.327	-0.297	-0.498**	-0.505**	-0.097	-0.034
7. Self Employed with employees (M)						1	0.954**	0.782**	0.848**	0.659**	0.377*	0.833**	0.786**	0.531**	0.469*
8. Self Employed with employees (W)							1	0.796**	0.859**	0.589**	0.331	0.713**	0.656**	0.502**	0.476**
9. Self Employed without employees (M)								1	0.965**	0.670**	0.449*	0.629**	0.639**	0.751**	0.711**
10. Self Employed without employees (W)									1	0.638**	0.417*	0.670**	0.650**	0.708**	0.672**
11. Self Employment - Manufacturing (M)										1	0.765**	0.697**	0.776**	0.631**	0.519**
12. Self Employment - Manufacturing (W)											1	0.518**	0.620**	0.418*	0.382*
13. Self Employment - Services (M)												1	0.976**	0.521**	0.425*
14. Self Employment - Services (W)													1	0.517**	0.438*
15. Self Employed - 20-29 (M)														1	0.876**
16. Self Employed - 20-29 (W)															1

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Figure 1 presents the correlation matrix of the variables studied in this research, and as can be seen, seven of the fifteen entrepreneurship indicators have a correlation at a significance at more than 0.05 level. The *Tax on personal income* and *Self-Employment Services (M/W)* are highly positively correlated over 0.5 indicating that the higher Tax on personal income increases Self-Employment Services (M/W) rates. The *Tax on personal income* is also positively correlated with *Self-Employed with employees (M)*. On the other hand, the *Tax on personal income* is negatively correlated with the *Number of New firms*, *Self Employment rates*, and *Self Employment rates (M/W)* indicating that higher tax on personal income decreases the number of new firms and Self-Employment rates in both men and women and overall Self-Employment rates.

2. Linear Regression

A linear regression model with the Self-Employment indicators as dependent variables with the Tax on Personal income (% of GDP) as the independent variable to understand which of the Self-Employment indicators were statistically significant with a wealth tax. This is represented as Self-Employed with employees (M/W), Self-Employed without employees (M/W), Self-Employment – Manufacturing (M/W), Self-Employment - Services (M/W), Self-Employment – Youth (M/W), Self-Employment rate, Self-Employment (M/W), GFCF, New firms rate, = f [Tax on Personal income (% of GDP)]

The indicators that were statistically significant, shown in *Figure 2* below, are represented as having a p-value of less than 0.05, meaning at 95% confidence and t-stat critical value at over absolute score of 1.96 for 95% confidence, the data results did not occur by chance and rejects

the null hypothesis that there is no relationship between the dependent and independent variable. The below table is the linear regression model ran with the independent variable being the Tax on personal income (% of GDP). The results of the linear regression model with the independent variable being Tax on personal income (% of GDP) had same indicators that were statistically significantly indicated with a coefficient significance at * 10%, ** 5% and *** 1%, see *Figure 2* below.

Figure 2: Linear Regression model results with Tax on Personal Income (% of GDP)

Row No.	Attribute	Coefficient	Std. Error	St. Coef	Tolerance	t-Stat	P-Value
1	GFCF	-0.134	0.102	-0.136	0.830	-1.305	0.262
2	% Change of New Firms	-0.000	0.000	-0.269	0.792	-1.825	0.142
3	Self-Employment	0.545	0.156	0.953	0.781	3.496	0.025**
4	Self-Employment (W)	-0.430	0.221	-0.915	0.821	-1.9848	0.123
5	Self-Employment (M)	-0.272	0.139	-0.666	0.807	-1.954	0.122
6	Self-Employed with employees (M)	8.123	1.243	3.601	0.805	6.356	0.003***
7	Self-Employed with employees (W)	-6.183	1.970	-1.469	0.955	-3.138	0.035**
8	Self-Employed without employees (M)	-0.499	1.227	-0.552	0.998	-0.407	0.705
9	Self-Employed with employees (W)	-0.504	1.685	-0.372	0.991	-0.299	0.780
10	Self-Employment-Mfg (M)	-2.294	0.283	-1.610	0.952	-8.112	0.001***
11	Self-Employment-Mfg (W)	-0.406	0.306	-0.220	0.993	-1.326	0.256
12	Self-Employment-Serv (M)	-1.387	0.142	-5.593	0.504	-9.796	0.001***
13	Self-Employment-Serv (W)	0.996	0.094	5.335	0.603	10.626	0.000***
14	Self-Employed – 20-29 (M)	1.169	0.258	1.105	0.992	4.534	0.011**
15	Self-Employed – 20-29 (W)	-1.719	0.264	-1.096	1.000	-6.520	0.003***

*Note: coefficient significance at * 10%, ** 5% and *** 1%*

3. Longitudinal Study (2010-2020)

The longitudinal study compares the averages between non-wealth tax countries (22 countries) and wealth tax countries (7 countries) from 2010 to 2020. The data from Belgium from 2018 to 2020 and from Colombia from 2019 to 2020 was included in the wealth tax countries group to reflect the countries' adoption of the wealth tax.

A longitudinal study was performed for the years 2010 to 2020 for the entrepreneurial indices above; Self-Employed with employees (Men and Women), Self-Employed without employees (Men and Women), Self-Employment – Services (Men and Women), Self-Employment – Manufacturing (Men and Women), and Self-Employed 20-29 (Men and Women). The study also included the base line entrepreneurship indices which includes Self Employment Rate (Men and Women), New Firms (% Change year over year), and Gross Fixed Capital Formation (Investment). Some of the countries did not have data for certain years in the study, and as such, the averages will not have data from every country for each year. A two tailed paired difference t-test was performed to determine if the differences in the various entrepreneurship indices from 2010 to 2020 between non-wealth tax countries and wealth tax countries are statistically significant, with the results found in the *Figure 3* below. In *Figure 3*, significant results are indicated as significance at * 10%, ** 5% and *** 1%. This finding indicates that the differences in the entrepreneurship indicators below between non-wealth tax countries and wealth tax countries are all significant except for Pair 13 *Self-Employment without employees – Women* and Pair 15 *Self-Employment Youth – Women*.

Figure 3: Test of Difference of Means (Non-Wealth Tax vs. Wealth Tax Countries)

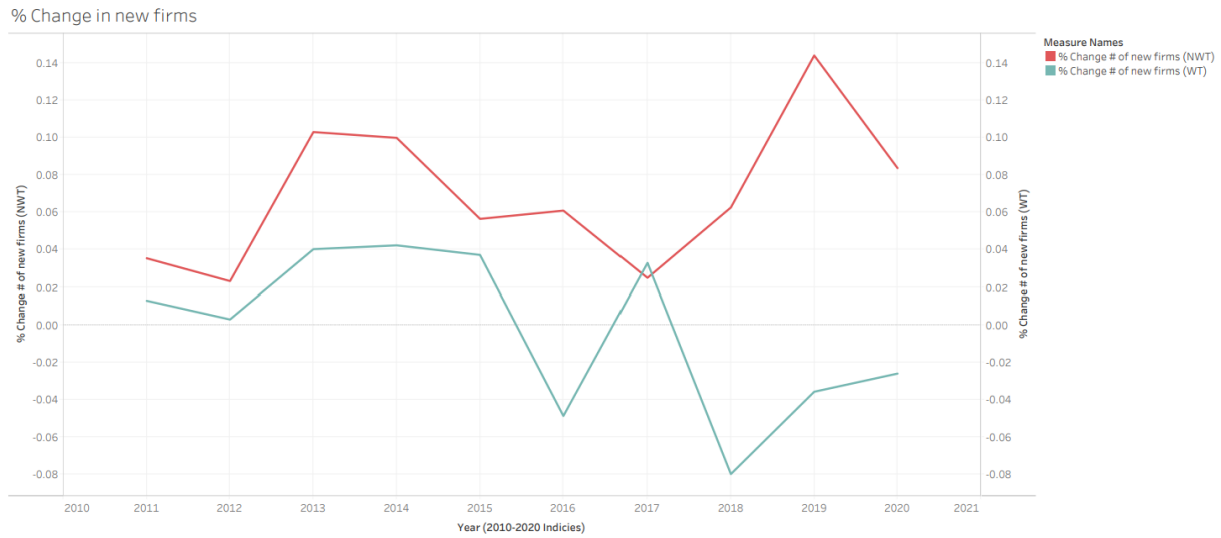
Entrepreneurship Indicator		Paired Differences					t	df	Significance
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				Two-Sided p
					Lower	Upper			
Pair 1	% Change # of new firms (NWT) - % Change # of new firms (WT)	0.0715	0.0614	0.0194	0.0276	0.1155	3.6825	9.0000	0.0051***
Pair 2	GFCF (NWT) - GFCF (WT)	2.1431	1.8252	0.5503	0.9169	3.3692	3.8944	10.0000	0.0030***
Pair 3	MFG-M (NWT) - MFG-M (WT)	1.4522	0.7795	0.2350	0.9285	1.9759	6.1787	10.0000	0.0001***
Pair 4	MFG-W (NWT) - MFG-W (WT)	1.8206	0.5062	0.1526	1.4805	2.1606	11.9286	10.0000	0.0000***
Pair 5	SERV-M (NWT) - SERV-M (WT)	(8.2497)	0.8790	0.2650	(8.8402)	(7.6591)	(31.1265)	10.0000	0.0000***
Pair 6	SERV-W (NWT) - SERV-W (WT)	(8.6745)	1.5722	0.4740	(9.7307)	(7.6183)	(18.2993)	10.0000	0.0000***
Pair 7	SE (NWT) - SE (WT)	2.7407	0.9381	0.2828	2.1105	3.3709	9.6899	10.0000	0.0000***
Pair 8	SE-M (NWT) - SE-M (WT)	0.4472	0.6803	0.2051	(0.0098)	0.9042	2.1803	10.0000	0.0542*
Pair 9	SE-W (NWT) - SE-W (WT)	3.0577	0.8563	0.2582	2.4824	3.6329	11.8436	10.0000	0.0000***
Pair 10	SE w Emp-M (NWT) - SE w Emp-M (WT)	(0.4822)	0.1260	0.0380	(0.5668)	(0.3975)	(12.6889)	10.0000	0.0000***
Pair 11	SE w Emp-W (NWT) - SE w Emp-W (WT)	(0.3095)	0.0772	0.0233	(0.3614)	(0.2577)	(13.2902)	10.0000	0.0000***
Pair 12	SE w/o Emp-M (NWT) - SE w/o Emp-M (WT)	0.8162	0.6466	0.1950	0.3819	1.2506	4.1869	10.0000	0.0000***
Pair 13	SE w/o Emp-W (NWT) - SE w/o Emp-W (WT)	0.3238	0.6845	0.2064	(0.1360)	0.7836	1.5691	10.0000	0.1477
Pair 14	SE Youth - M (NWT) - SE Youth - M (WT)	(0.3672)	0.3307	0.0997	(0.5893)	(0.1450)	(3.6829)	10.0000	0.0000***
Pair 15	SE Youth - W (NWT) - SE Youth - W (WT)	(0.3437)	0.6433	0.1940	(0.7759)	0.0884	(1.7722)	10.0000	0.1068

Note: Significance at * 10%, ** 5% and *** 1%

Data Analysis and Results

This section presents the detailed analysis of the entrepreneurship indices' differences between wealth tax countries and non-wealth tax countries on average between 2010 and 2020 because the differences are statistically significant as shown in *Figure 3*. The entrepreneurship indices depicted in this section include: % Change in the number of new firms, GFCF, Self-Employment % rates – Manufacturing men and women, Self-Employment % rates – Services men and women, Self-Employment % rates – men and women, Self-Employment % rates – with employees – men and women, Self-Employment % rates – without employees – men, and Self-Employment % rates – youth – men and women.

Figure 4: % Change in number of new firms (pair 1 of figure 3)

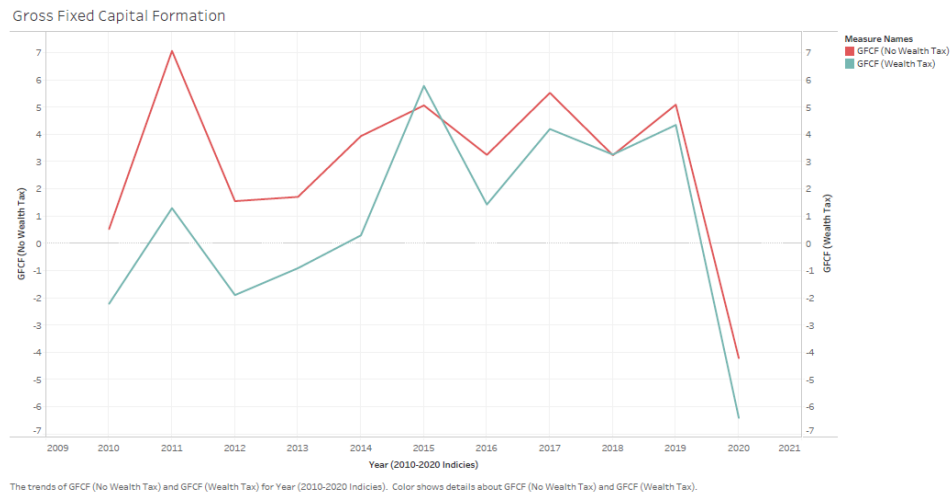


The trends of % Change # of new firms (NWT) and % Change # of new firms (WT) for Year (2010-2020 Indices). Color shows details about % Change # of new firms (NWT) and % Change # of new firms (WT). The view is filtered on sum of % Change # of new firms (NWT), which keeps non-Null values only.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
% Change # of new firms (NWT)		3.54%	2.31%	10.29%	9.98%	5.64%	6.08%	2.49%	6.25%	14.39%	8.36%
% Change # of new firms (WT)		1.29%	0.29%	4.02%	4.22%	3.71%	-4.87%	3.29%	-7.98%	-3.57%	-2.60%
Difference		2.24%	2.02%	6.27%	5.76%	1.93%	10.95%	-0.80%	14.23%	17.97%	10.96%

The % Change in number of new firms average for non- wealth tax countries in color red, is higher from 2011 to 2020 by a difference of around -0.8% growth rate to 17.97% growth rate than the average for wealth tax countries in color teal.

Figure 5: Gross Fixed Capital Formation (“GFCF”) (pair 2 of figure 3)

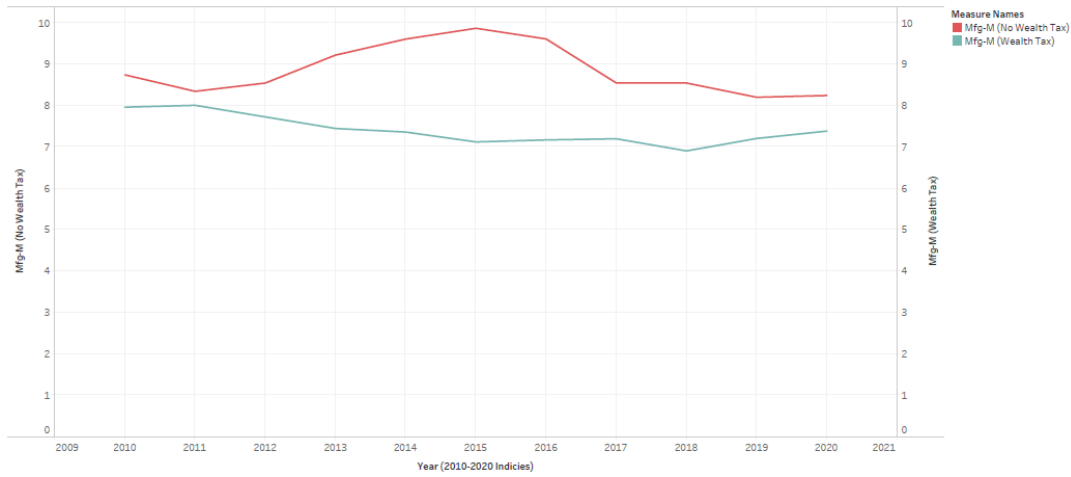


Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
GFCF (NWT)	0.525662	7.069782	1.554137	1.710764	3.942481	5.068772	3.254371	5.529471	3.240836	5.096743	-4.2106
GFCF (WT)	-2.2169	1.298025	-1.89421	-0.9067	0.298306	5.786225	1.430997	4.202381	3.264849	4.351285	-6.40576
Difference	2.742565	5.771758	3.448344	2.617466	3.644175	-0.71745	1.823374	1.327091	-0.02401	0.745458	2.195165

The GFCF average for non- wealth tax countries in color red, (investment in acquisition of produced assets), is higher from 2010 to 2014 by a difference of around 2.6% growth rate to 5.7% growth rate than the average for wealth tax countries in color teal. However, after 2015, the difference shrinks.

Figure 6: % Of Self Employed in Manufacturing (M/W) (pair 3 and 4 of figure 3)

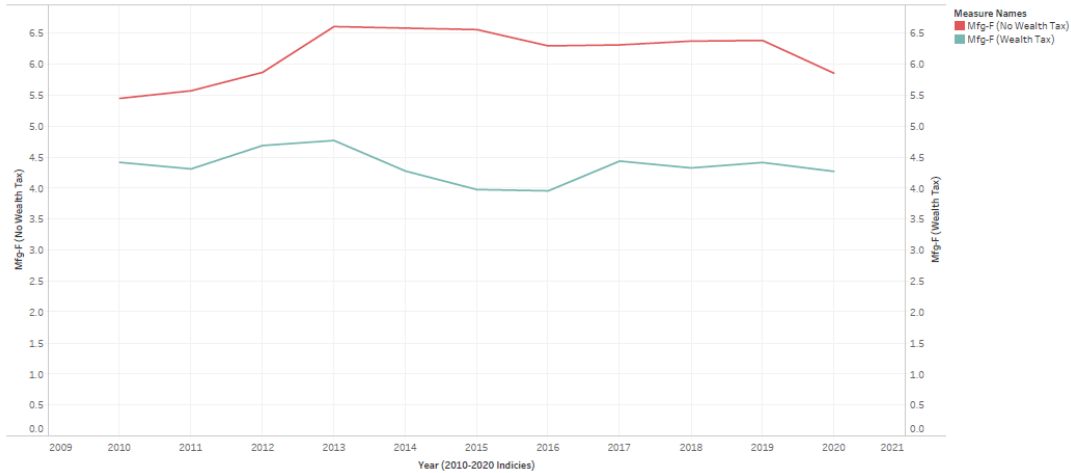
% of Self Employed in Manufacturing (Men)



The trends of Mfg-M (No Wealth Tax) and Mfg-M (Wealth Tax) for Year (2010-2020 Indices). Color shows details about Mfg-M (No Wealth Tax) and Mfg-M (Wealth Tax).

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
MFG-M (NWT)	8.740994	8.342756	8.543847	9.218431	9.60497	9.865867	9.608214	8.544132	8.543826	8.200071	8.242804
MFG-M (WT)	7.960949	8.005714	7.725476	7.446488	7.359923	7.121664	7.16994	7.198002	6.904856	7.205479	7.383339
Difference	0.780045	0.337042	0.81837	1.771943	2.245047	2.744203	2.438274	1.34613	1.63897	0.994592	0.859464

% of Self Employed in Manufacturing (Women)

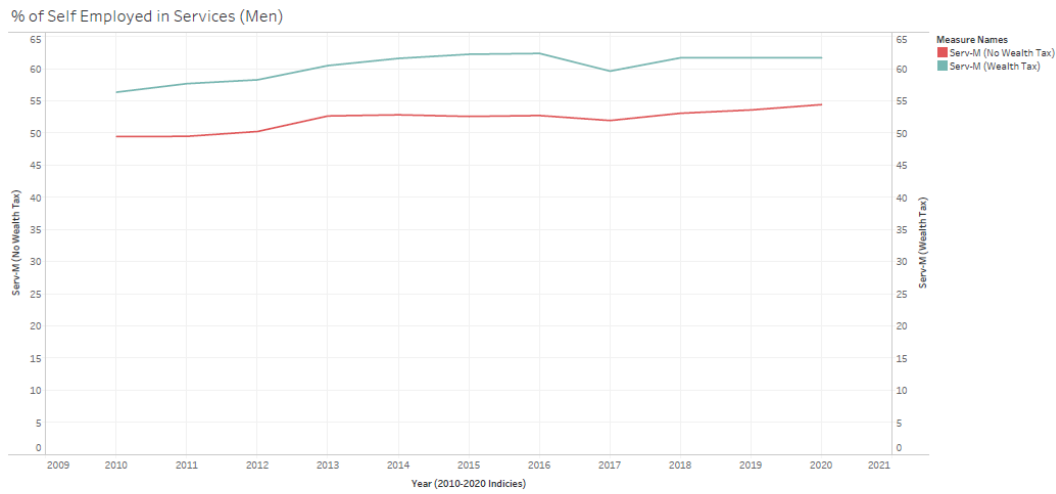


The trends of Mfg-F (No Wealth Tax) and Mfg-F (Wealth Tax) for Year (2010-2020 Indices). Color shows details about Mfg-F (No Wealth Tax) and Mfg-F (Wealth Tax).

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
MFG-W (NWT)	5.453627	5.576537	5.873783	6.612804	6.588138	6.564565	6.301157	6.317428	6.378385	6.389197	5.860206
MFG-W (WT)	4.420512	4.314859	4.692472	4.773548	4.280558	3.981643	3.960955	4.44114	4.330688	4.418646	4.274665
Difference	1.033116	1.261678	1.181311	1.839257	2.30758	2.582922	2.340203	1.876289	2.047697	1.970551	1.585541

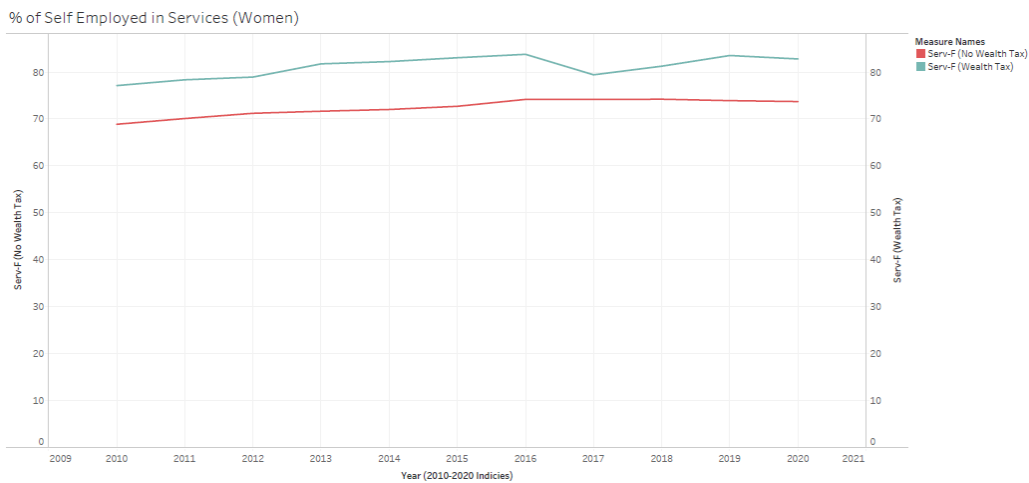
The average % of Self Employed in Manufacturing as opposed to services in non-wealth tax countries (in color red) for men and women is higher than wealth tax countries (in color teal), with a higher % of 0.78%-2.74% for men, and 1.03%-2.58% for women.

Figure 7: % Of Self Employed in Services (M/W) (pair 5 and 6 of figure 3)



The trends of Serv-M (No Wealth Tax) and Serv-M (Wealth Tax) for Year (2010-2020 Indices). Color shows details about Serv-M (No Wealth Tax) and Serv-M (Wealth Tax).

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
SERV-M (NWT)	49.48198	49.52034	50.26948	52.68709	52.86187	52.61269	52.74972	51.97575	53.10528	53.61942	54.44763
SERV-M (WT)	56.38252	57.71191	58.30201	60.51807	61.63317	62.27623	62.40575	59.65611	61.72663	61.74504	61.72039
Difference	-6.90054	-8.19157	-8.03254	-7.83098	-8.77129	-9.66354	-9.65603	-7.68036	-8.62135	-8.12562	-7.27276

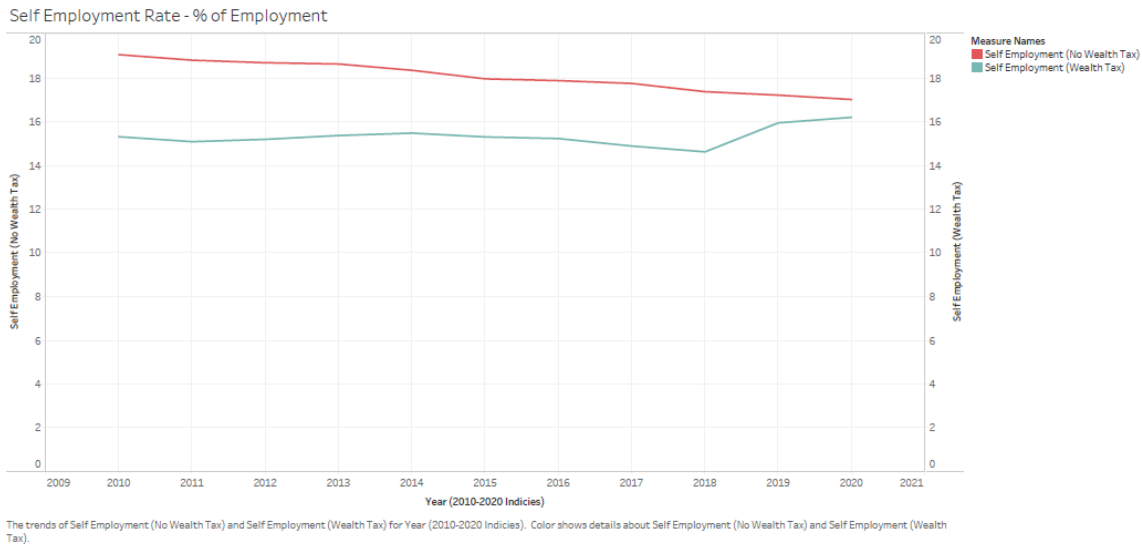


The trends of Serv-F (No Wealth Tax) and Serv-F (Wealth Tax) for Year (2010-2020 Indices). Color shows details about Serv-F (No Wealth Tax) and Serv-F (Wealth Tax).

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
SERV-W (NWT)	68.94441	70.1667	71.28387	71.7241	72.09199	72.77296	74.24169	74.22208	74.28464	73.97635	73.77991
SERV-W (WT)	77.18082	78.41685	79.00026	81.81347	82.29818	83.11473	83.84338	79.47713	81.3157	83.59209	82.85582
Difference	-8.23641	-8.25014	-7.71639	-10.0894	-10.2062	-10.3418	-9.60169	-5.25504	-7.03106	-9.61574	-9.07591

On the other hand, the average % of Self-Employed in services as opposed to manufacturing in non-wealth tax countries (in color red) for men and women is lower than wealth tax countries (in color teal), with a lower % of 6.90%-9.66% for men, and 5.25%-10.21% for women.

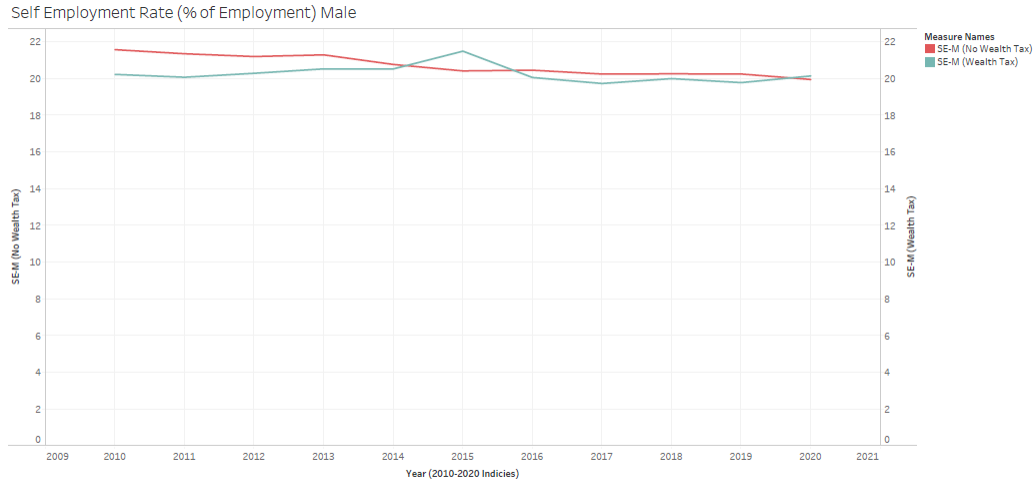
Figure 8: Self-Employment Rate - % of Employment (pair 7 of figure 3)



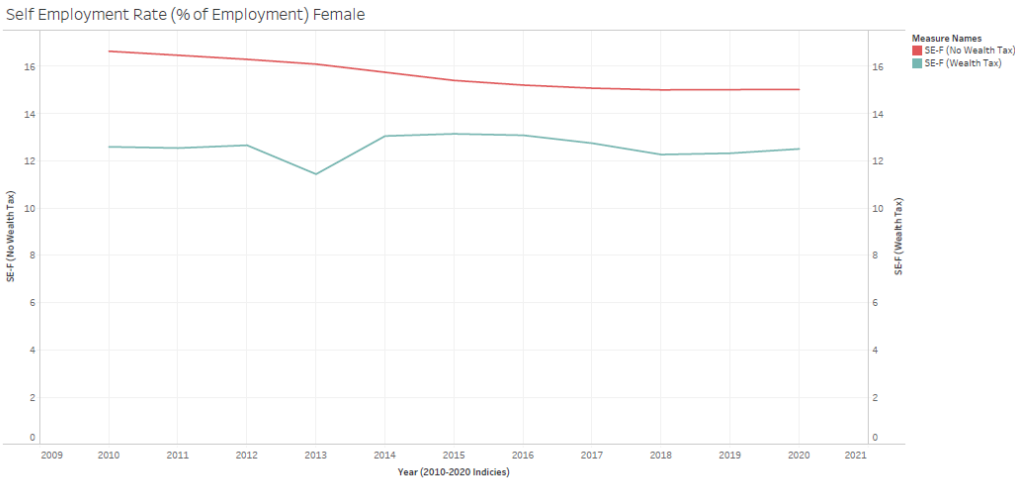
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
SE (NWT)	19.08603	18.83421	18.71697	18.65853	18.371	17.98022	17.89865	17.76974	17.39265	17.23418	17.03404
SE (WT)	15.33018	15.1047	15.21188	15.38699	15.49658	15.32207	15.247	14.90456	14.63883	15.96688	16.21855
Difference	3.755853	3.729513	3.505093	3.271538	2.874418	2.658148	2.651655	2.865178	2.75383	1.267297	0.81549

The overall Self-Employment rate is higher on average in non-wealth tax countries (in color red) compared to wealth tax countries (in color teal) from 0.82% to 3.75%.

Figure 9: Self-Employment Rate - % of Employment (M/W) (pair 8 and 9 of figure 3)



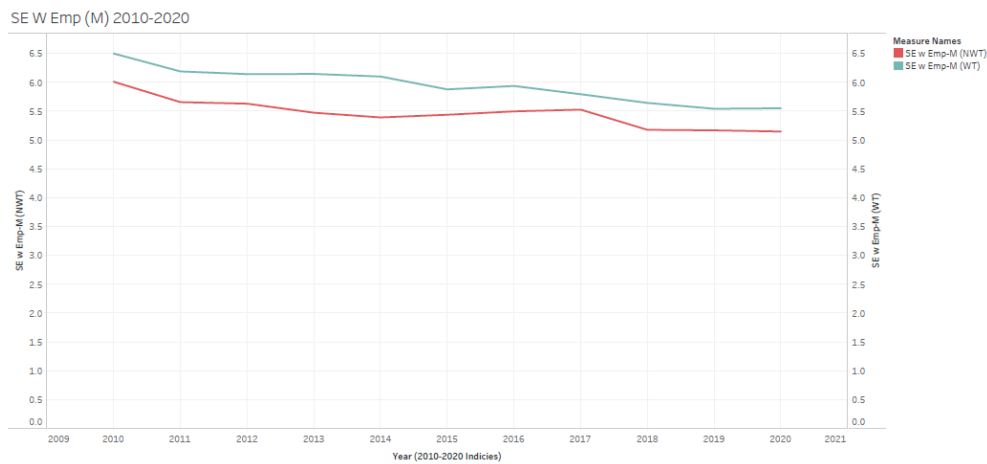
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
SE-M (NWT)	21.57302	21.35002	21.19872	21.28992	20.76735	20.4149	20.45522	20.24493	20.25675	20.24762	19.94908
SE-M (WT)	20.22619	20.07128	20.28656	20.52727	20.52332	21.49045	20.05677	19.73055	19.99598	19.77862	20.14132
Difference	1.346829	1.278736	0.912161	0.762657	0.244024	-1.07555	0.39845	0.51438	0.260769	0.468999	-0.19224



Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
SE-W (NWT)	16.64594	16.47638	16.3025	16.10025	15.75568	15.40955	15.21248	15.08282	15.00964	15.0216	15.02229
SE-W (WT)	12.5987	12.54692	12.66447	11.44167	13.05699	13.14812	13.08799	12.75165	12.27182	12.32683	12.50981
Difference	4.047232	3.929462	3.638031	4.658579	2.698693	2.261428	2.124496	2.331179	2.737812	2.694771	2.512476

The self-employment rate for men for non-wealth tax countries (in color red) compared to wealth tax countries (in color teal) have little difference on average. However, the self-employment rate for women in non-wealth tax countries (in color red) compared to wealth tax countries (in color teal) is higher by around 2.13% - 4.66%.

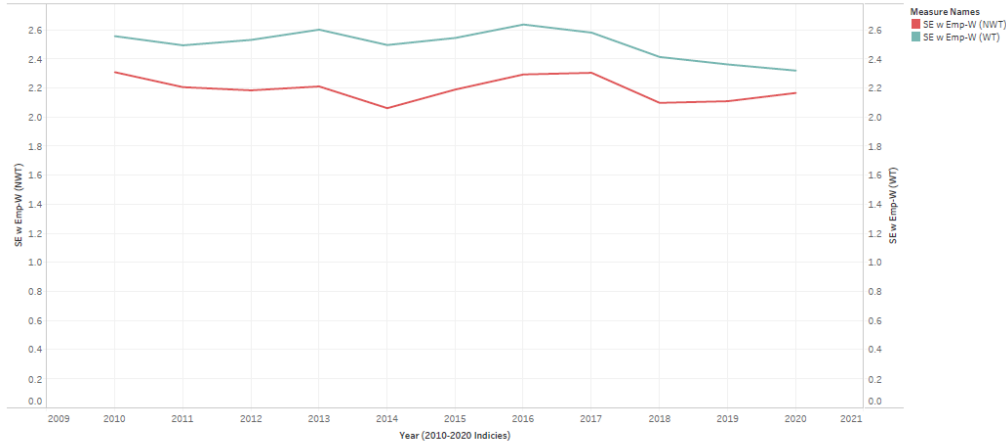
Figure 10: Self-Employment with Employees (M/W) (pair 10 and 11 of figure 3)



The trends of SE w Emp-M (NWT) and SE w Emp-M (WT) for Year (2010-2020 Indices). Color shows details about SE w Emp-M (NWT) and SE w Emp-M (WT).

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
SE w Emp-M (NWT)	6.011348	5.658107	5.631647	5.474912	5.393575	5.43953	5.498196	5.52824	5.178129	5.169418	5.148842
SE w Emp-M (WT)	6.50041	6.190145	6.144062	6.146948	6.101926	5.879263	5.938303	5.795169	5.644817	5.543102	5.551779
Difference	-0.48906	-0.53204	-0.51242	-0.67204	-0.70835	-0.43973	-0.44011	-0.26693	-0.46669	-0.37368	-0.40294

SE W Emp (W) 2010-2020



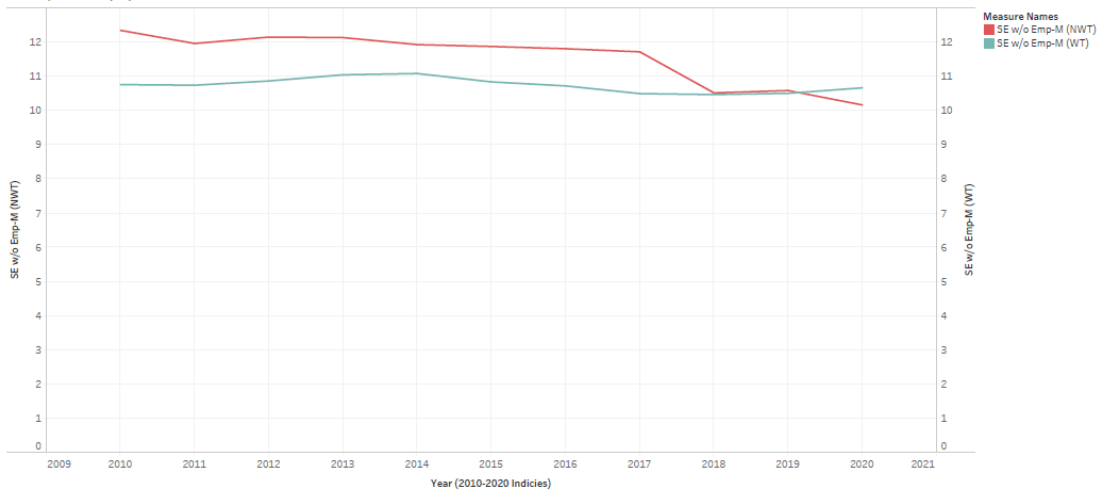
The trends of SE w Emp-W (NWT) and SE w Emp-W (WT) for Year (2010-2020 Indices). Color shows details about SE w Emp-W (NWT) and SE w Emp-W (WT).

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
SE w Emp-W (NWT)	2.309986	2.207008	2.185124	2.211993	2.062519	2.190725	2.294511	2.305795	2.098897	2.110472	2.16714
SE w Emp-W (WT)	2.557845	2.494885	2.53211	2.602729	2.496908	2.545664	2.637924	2.582165	2.414726	2.363323	2.320935
Difference	-0.24786	-0.28788	-0.34699	-0.39074	-0.43439	-0.35494	-0.34341	-0.27637	-0.31583	-0.25285	-0.1538

The Self- Employment with employees’ rate for men and women is higher on average in wealth-tax countries (in color teal) compared to non-wealth tax countries (in color red) by 0.15% to 0.43%

Figure 11: Self-Employment Without Employees (M) (pair 12 of figure 3)

SE W/o Emp (M) 2010-2020

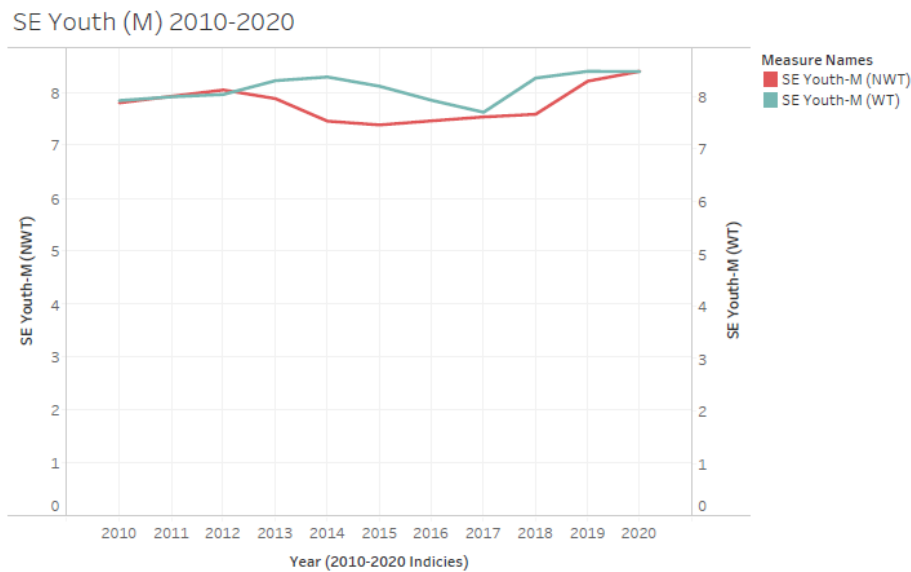


The trends of SE w/o Emp-M (NWT) and SE w/o Emp-M (WT) for Year (2010-2020 Indices). Color shows details about SE w/o Emp-M (NWT) and SE w/o Emp-M (WT).

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
SE w/o Emp-M (NWT)	12.33461	11.95076	12.13875	12.12323	11.91831	11.86394	11.79807	11.70746	10.51017	10.57817	10.15666
SE w/o Emp-M (WT)	10.75072	10.7338	10.85742	11.03833	11.07493	10.82971	10.71373	10.48871	10.4602	10.4974	10.6565
Difference	1.583888	1.216967	1.281331	1.084901	0.843383	1.034226	1.084342	1.21875	0.04997	0.08077	-0.49984

The Self- Employment with employee’s rate for men and women for non-wealth tax countries (in color red) compared to wealth tax countries (in color teal) have little difference on average, with wealth tax countries with slightly higher % rates. The Self- Employment without employee’s rate for men for non-wealth tax countries (in color red) compared to wealth tax countries (in color teal) has a small difference on average, however, with non-wealth tax countries having a slightly higher % rate than wealth tax countries.

Figure 12: Self Employment – Youth 20-29 (M) (pair 14 of figure 3)



The trends of SE Youth-M (NWT) and SE Youth-M (WT) for Year (2010-2020 Indices). Color shows details about SE Youth-M (NWT) and SE Youth-M (WT).

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
SE Youth-M (NWT)	7.811019	7.934333	8.054368	7.890975	7.465201	7.393736	7.470572	7.544885	7.595182	8.21984	8.406766
SE Youth-M (WT)	7.928268	7.999817	8.045019	8.308053	8.377923	8.201891	7.933878	7.705216	8.357566	8.486405	8.481916
Difference	-0.11725	-0.06548	0.00935	-0.41708	-0.91272	-0.80815	-0.46331	-0.16033	-0.76238	-0.26656	-0.07515

The average % of Self-Employed Youth (20-29 years old) in wealth tax countries (in color teal) for men and women is slightly higher than non- wealth tax countries (in color red), with a higher % of 0.06% to 0.81% for men.

Event Study (France and Colombia)

The simplified event study is conducted for Colombia comparing the indices in 2018 and 2020, the year before and after the adoption of the wealth tax in 2019. The indices studied included all the indices studied in the longitudinal study. No data for Colombia was available from 2018 to 2020 for the indices Self-Employed with employees (Men and Women), Self-Employed without employees (Men and Women), Self-Employment – Services (Men and Women), and Self-Employment – Manufacturing (Men and Women).

The event study will also be conducted for France in 2017 and 2019, the year before and after France abolished its net wealth tax in 2018 and replaced it that year with a real estate wealth tax.

A two tailed paired difference t-test was performed to determine if the change in the various entrepreneurship indices from 2017 to 2019 for France and 2018 to 2020 for Colombia are statistically significant, with the results found in the *Figure 13 (France)*, and *Figure 21 (Colombia)* below. In *Figure 13 and 21*, significant results are indicated as significance at * 10%, ** 5% and *** 1%. This finding indicates that the change in the entrepreneurship indicators year over year below for France and Colombia are all significant except for the GFCF indices for Colombia.

France (2017-2019)

Figure 13 – Panel A: France – Differences in all available entrepreneurship indices (2017-2019)

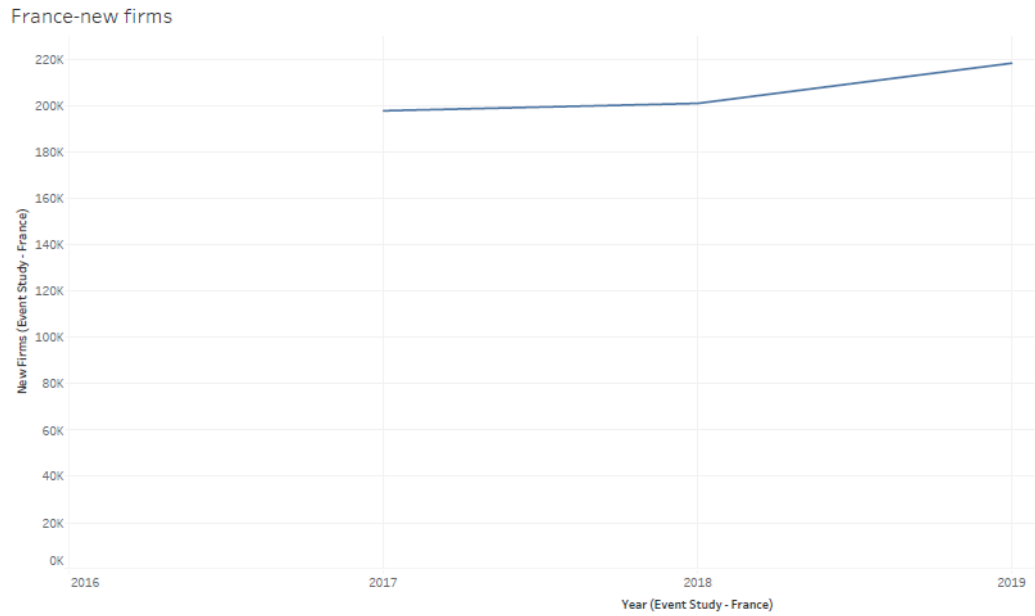
Year	2017	2018	2019
New Firms	197,899.00	201,087.00	218,426.00
Difference (Year over Year)		3,188.00	17,339.00
GFCF	4.75	3.30	4.04
Difference (Year over Year)		(1.45)	0.74
Self Emp Mfg. (M) % of SE	5.56	5.87	6.19
Difference (Year over Year)		0.31	0.31
Self Emp Mfg. (W) % of SE	4.78	3.96	4.66
Difference (Year over Year)		(0.82)	0.70
Self Emp Serv (M) % of SE	58.95	59.51	60.25
Difference (Year over Year)		0.56	0.74
Self Emp Serv (W) % of SE	83.79	85.00	84.54
Difference (Year over Year)		1.22	(0.46)
SE w Emp (M)	5.80	5.97	5.95
Difference (Year over Year)		0.17	(0.03)
SE w Emp (W)	2.21	2.10	2.15
Difference (Year over Year)		(0.11)	0.05
SE w/o Emp (M)	7.98	8.06	8.51
Difference (Year over Year)		0.08	0.45
SE w/o Emp (W)	5.48	5.53	5.85
Difference (Year over Year)		0.05	0.32
SE Total	11.62	11.66	12.15
Difference (Year over Year)		0.04	0.49
Self-Employed - 20-29 (M)	5.86	5.88	6.52
Difference (Year over Year)		0.02	0.63
Self-Employed - 20-29 (W)	4.47	4.58	4.64
Difference (Year over Year)		0.11	0.06

Figure 13 – Panel B: France – Differences in all available entrepreneurship indices (2017-2019)

Entrepreneurship Indicator	Mean	Std. Deviation	Std. Error Mean						
				t	df	Two-Sided p	Mean Difference	95% Confidence Interval of the Difference	
								Lower	Upper
New Firms	205804.0000	11046.5831	6377.7477	32.2691	2.0000	0.0010***	205804.0000	178362.7662	233245.2338
GFCF	4.0324	0.7227	0.4173	9.6636	2.0000	0.0105**	4.0324	2.2370	5.8278
Self Emp Mfg (M) % of SE	5.8751	0.3122	0.1802	32.5943	2.0000	0.0009***	5.8751	5.0995	6.6506
Self Emp Mfg (W) % of SE	4.4674	0.4409	0.2546	17.5487	2.0000	0.0032***	4.4674	3.3720	5.5627
Self Emp Serv (M) % of SE	59.5683	0.6496	0.3750	158.8357	2.0000	0.0000***	59.5683	57.9547	61.1820
Self Emp Serv (W) % of SE	84.4422	0.6140	0.3545	238.1904	2.0000	0.0000***	84.4422	82.9168	85.9675
SE w Emp (M)	5.9082	0.0910	0.0525	112.4510	2.0000	0.0001***	5.9082	5.6821	6.1342
SE w Emp (W)	2.1558	0.0542	0.0313	68.8967	2.0000	0.0002***	2.1558	2.0212	2.2904
SE w/o Emp (M)	8.1832	0.2849	0.1645	49.7504	2.0000	0.0004***	8.1832	7.4755	8.8910
SE w/o Emp (W)	5.6181	0.1981	0.1144	49.1188	2.0000	0.0004***	5.6181	5.1260	6.1102
SE Total	11.8118	0.2943	0.1699	69.5273	2.0000	0.0002***	11.8118	11.0808	12.5427
Self-Employed - 20-29 (M)	6.0865	0.3716	0.2145	28.3734	2.0000	0.0012***	6.0865	5.1635	7.0095
Self-Employed - 20-29 (W)	4.5610	0.0879	0.0507	89.9217	2.0000	0.0001***	4.5610	4.3427	4.7792

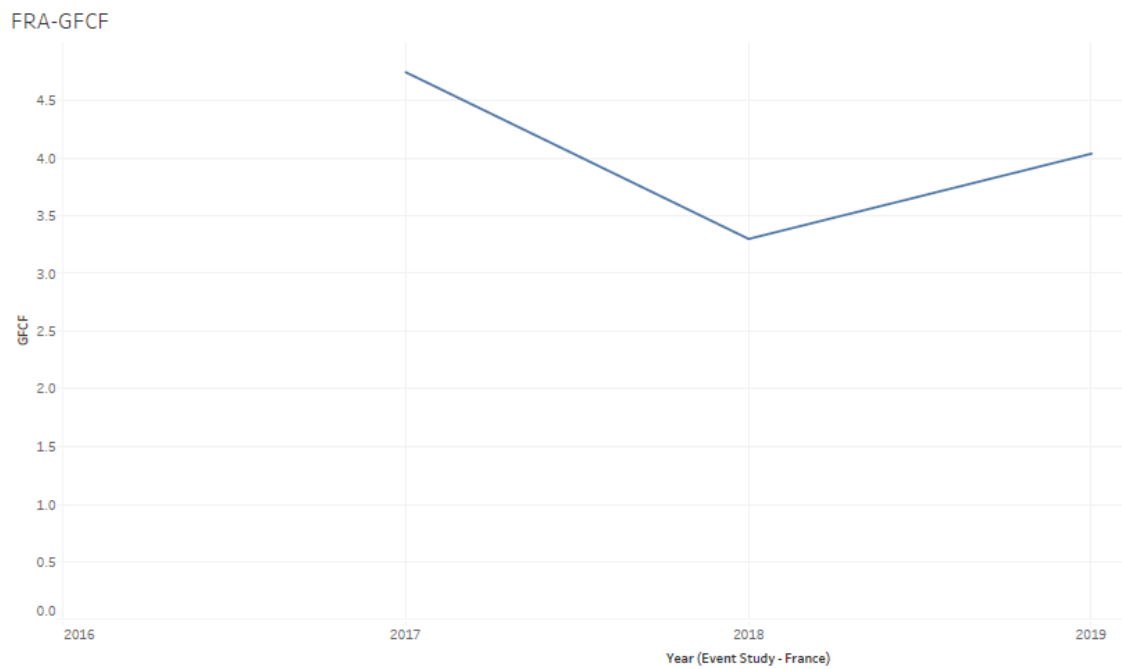
Note: Significance at * 10%, ** 5% and *** 1%

Figure 14: France New Firms (2017 to 2019)



The trend of sum of New Firms (Event Study - France) for Year (Event Study - France).

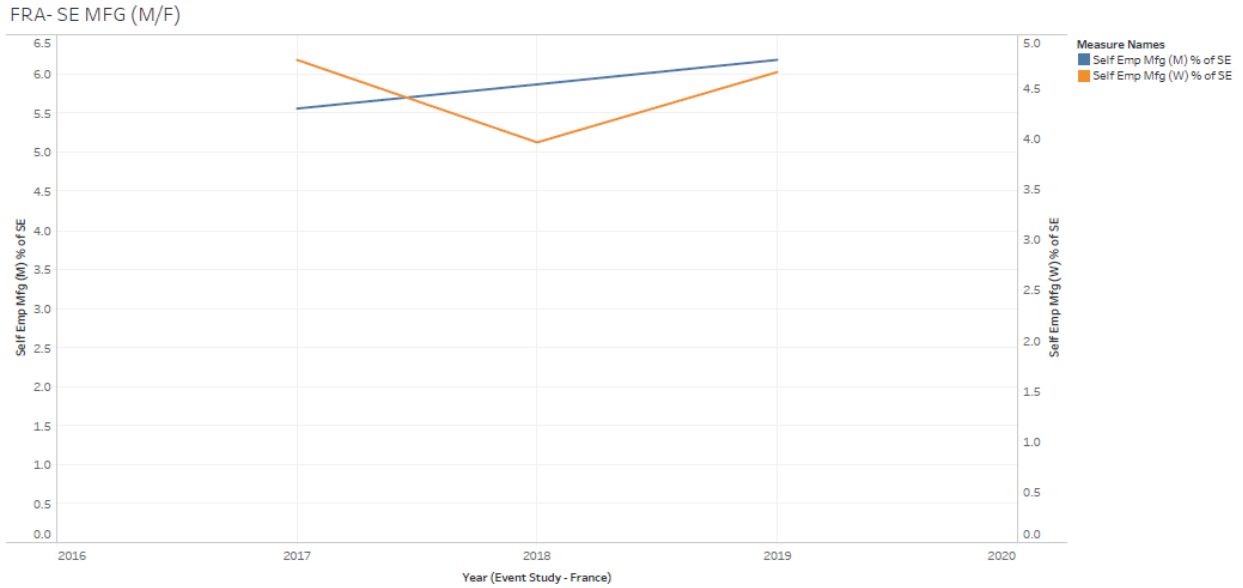
Figure 15: France GFCF (2017 to 2019)



The trend of sum of GFCF for Year (Event Study - France).

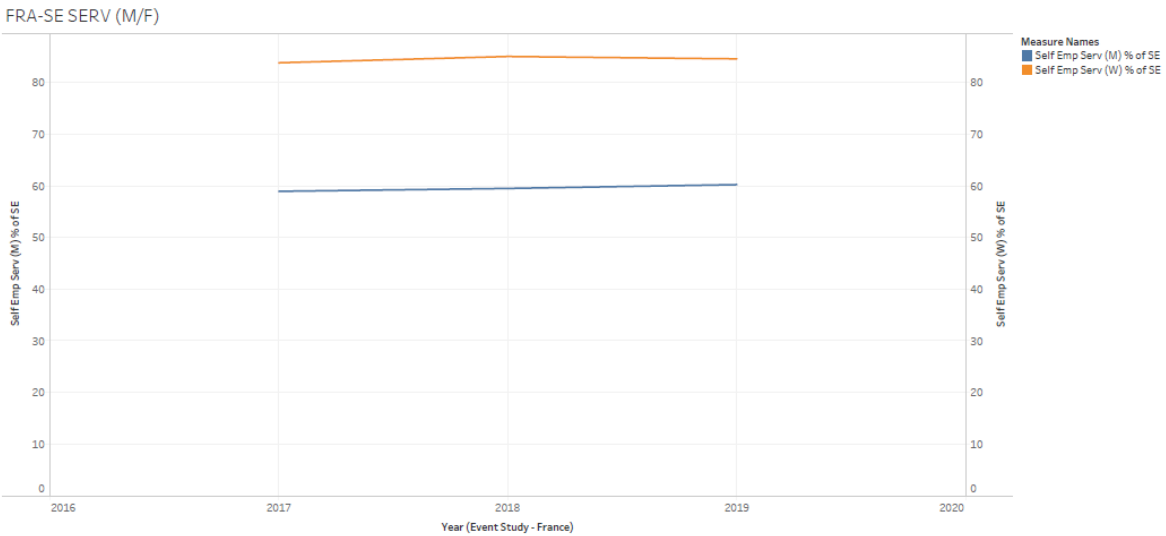
After France repealed the wealth tax, there were 17,339 new firms, and increase in GFCF of 0.7397.

Figure 16: France Self-Employment Manufacturing (M/W)



The trends of Self Emp Mfg (M) % of SE and Self Emp Mfg (W) % of SE for Year (Event Study - France). Color shows details about Self Emp Mfg (M) % of SE and Self Emp Mfg (W) % of SE.

Figure 17: France – Self-Employment Services (M/W)



The trends of Self Emp Serv (M) % of SE and Self Emp Serv (W) % of SE for Year (Event Study - France). Color shows details about Self Emp Serv (M) % of SE and Self Emp Serv (W) % of SE.

France’s Self-Employment rate– Services and manufacturing as a % of Self-Employment for men saw a slight increase after the repeal of the wealth tax in 2018. France’s Self-Employment rate– Services and manufacturing as a % of Self-Employment for women had a larger change, with a decrease in Services as a % of Self-Employment from 2018-2019 of 0.46%, and an increase in Manufacturing as a % of Self-Employment from 2018-2019 of 0.69%.

Figure 18: France – Self-Employment Rate %

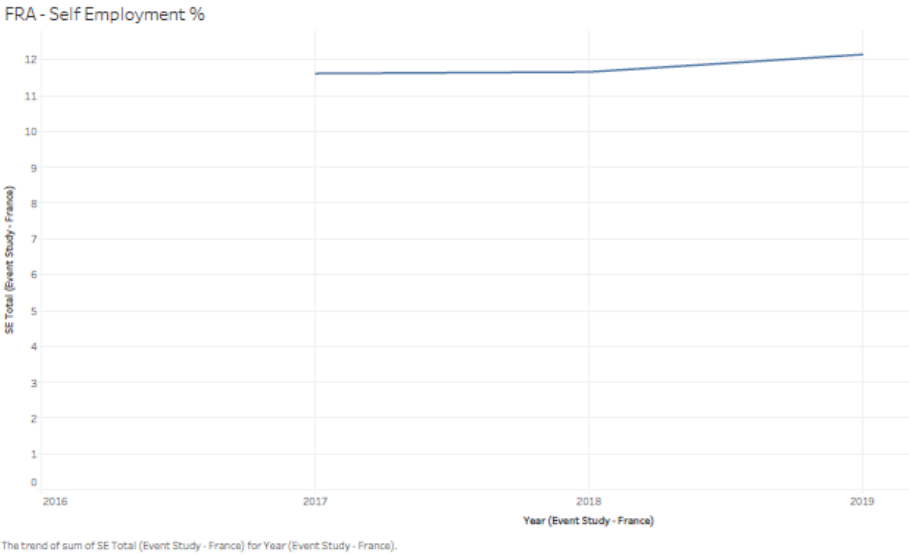


Figure 19: France – Self-Employment with employees

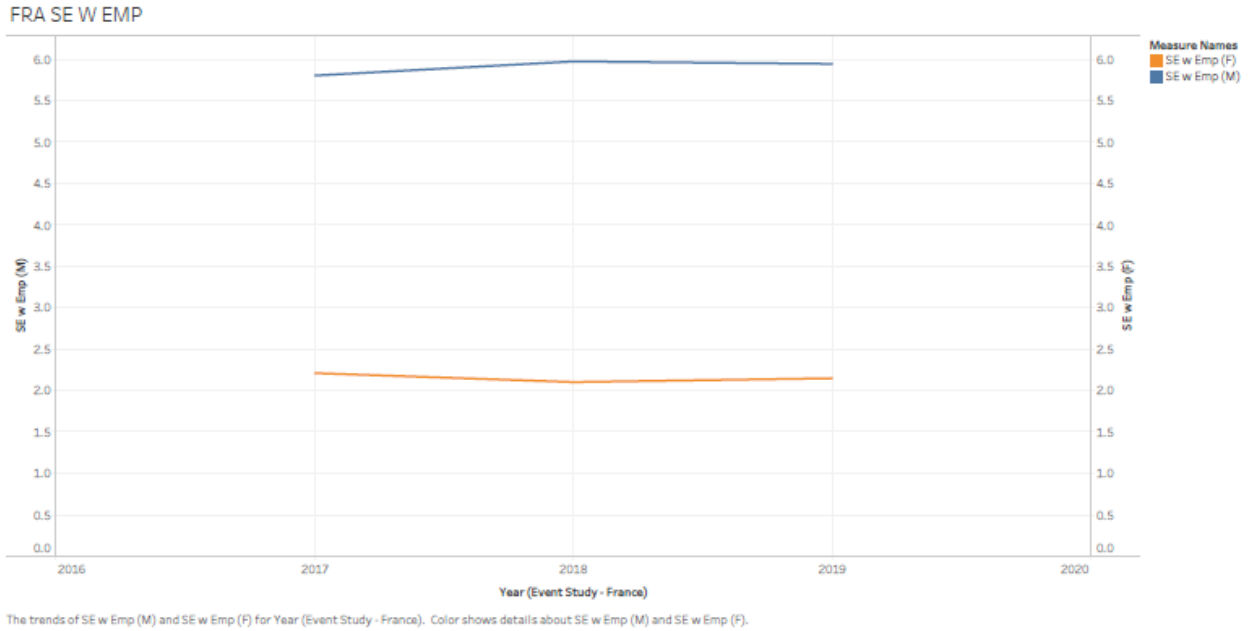
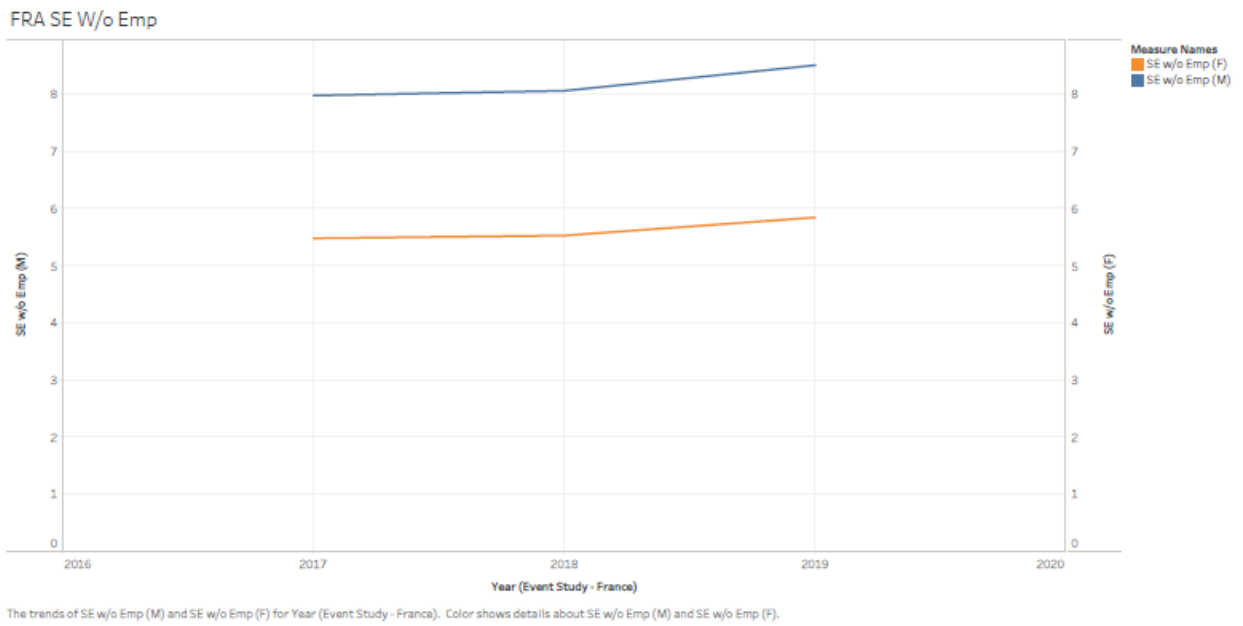


Figure 20: France – Self-Employment without employees



France's number of new firms saw an increase of 3,188 firms from 2017 to 2018, and 17,339 firms from 2018 to 2019 after the repeal of the wealth tax in 2018. Self-Employment rates (overall, Self-Employment with employees and without) stayed relatively the same before and after the repeal of the wealth tax. The Self-Employment with employees fell slightly for men and the Self-Employment without employees increased for men and women by 0.44% and 0.32% respectively. The overall Self-Employment rate increased by 0.48%.

Colombia (2018-2020)

The event study will also be conducted for Colombia in 2018 and 2020, the year before and after Colombia adopted its net wealth tax in 2019.

Figure 21 - Panel A: Differences in all available entrepreneurship indices (2017-2019)

Year	2018	2019	2020
New Firms	67,983.00	74,706.00	68,749.00
Difference (Year over Year)		6,723.00	(5,957.00)
GFCF	1.04	2.24	(23.29)
Difference (Year over Year)		1.20	(25.53)
SE Total	52.09	50.13	51.31
Difference (Year over Year)		(1.96)	1.18
SE (M)	53.74	50.93	52.48
Difference (Year over Year)		(2.82)	1.55
SE (W)	49.76	49.00	49.51
Difference (Year over Year)		(0.76)	0.50

Figure 21 - Panel B: Differences in all available entrepreneurship indices (2017-2019)

Entrepreneurship Indicator	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference					
				t	df	Two-Sided p	Mean Difference	Lower	Upper
				New Firms	70,479.3333	3,680.3834	2,124.8704	33.1688	2.0000
GFCF	(6.6730)	14.4053	8.3169	(0.8023)	2.0000	0.5065	(6.6730)	(42.4577)	29.1116
SE Total	51.1760	0.9851	0.5688	89.9792	2.0000	0.0001***	51.1760	48.7288	53.6231
SE (M)	52.3836	1.4104	0.8143	64.3299	2.0000	0.0002***	52.3836	48.8800	55.8872
SE (W)	49.4250	0.3865	0.2231	221.5067	2.0000	0.0000***	49.4250	48.4649	50.3850

Note: Significance at * 10%, ** 5% and *** 1%

Figure 22: Colombia – New Firms (2018-2020)

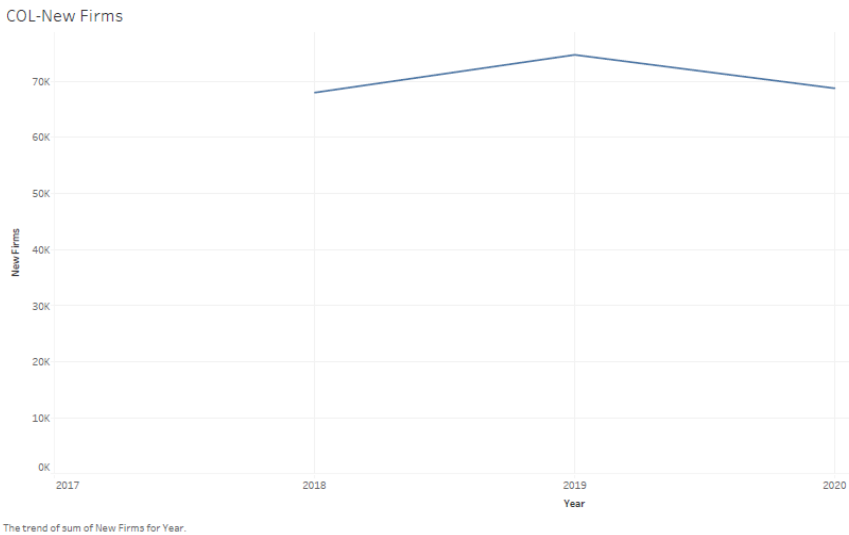
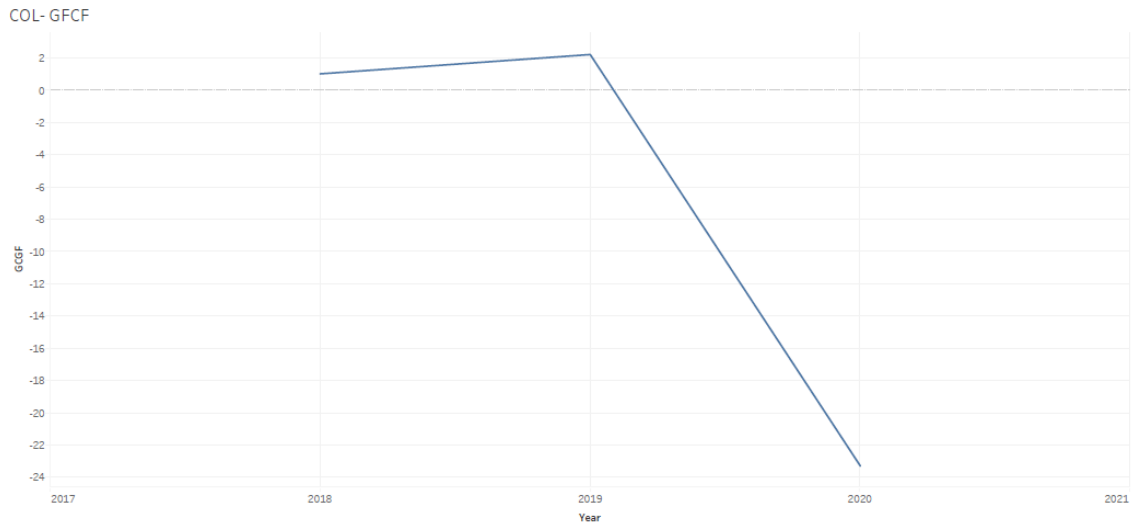


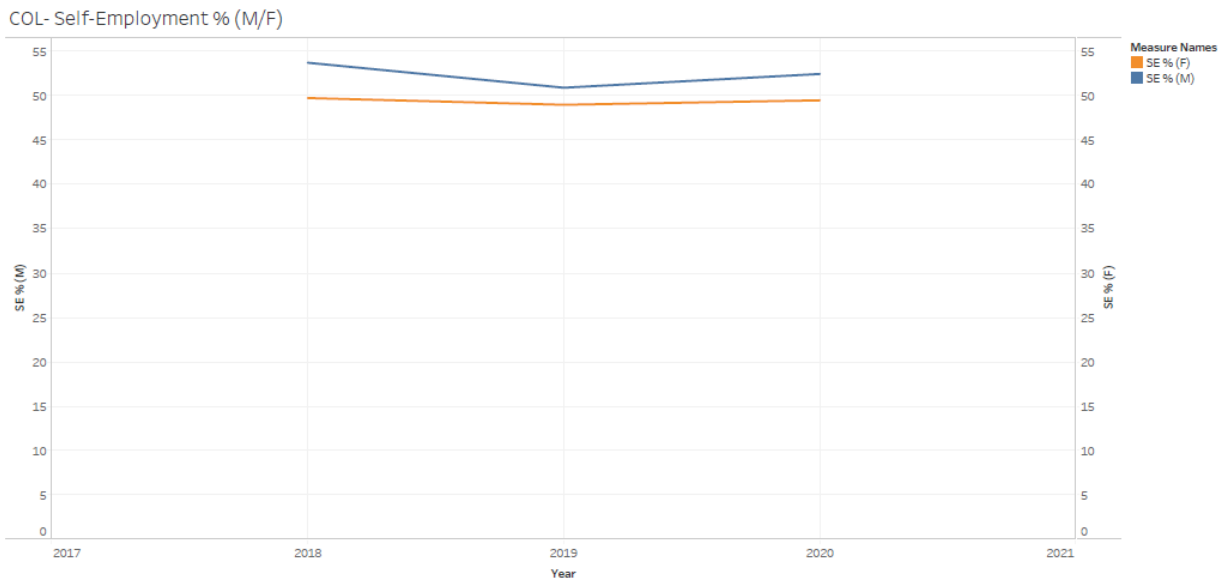
Figure 23: Colombia – GFCF (2018-2020)



The trend of sum of GFCF for Year.

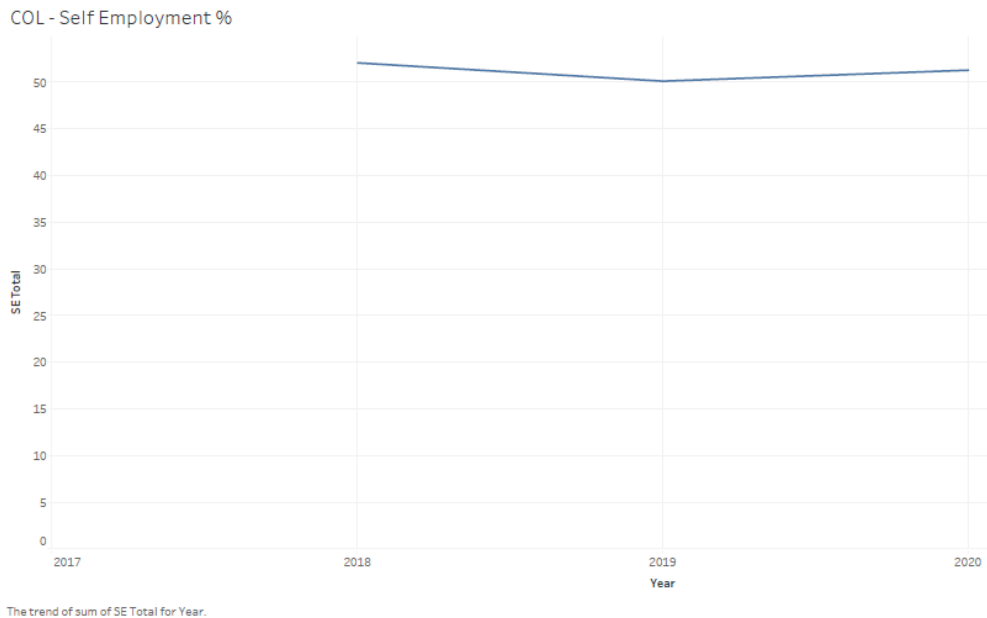
After Colombia adopted the wealth tax in 2019, the number of new firms fell by 5,957 and the GFCF fell by 25.52 in 2020.

Figure 24: Colombia – Self-Employment Rate % (M/W)



The trends of SE % (M) and SE % (F) for Year. Color shows details about SE % (M) and SE % (F).

Figure 25: Colombia – Self-Employment Rate %



There was an overall drop in Self-Employment rates for men and women in the year of the adoption of the wealth tax – a decrease of 2.81% for men, 0.76% for women, and overall, 1.96%, with a subsequent recovery in Self-Employment rates in 2020 – an increase of 1.55% for men, 0.50% for women, and overall, 1.12%.

Discussion

Longitudinal Study

Based on the longitudinal study from 2010-2020 for the OECD countries, it was found using the paired differences T-test that all the entrepreneurship indicators' differences between non-wealth tax and wealth tax countries were statistically significant, as shown in *Figure 3* with the exception of *Pair 13 – Self-Employment without employees (Women)*, and *Pair 15 – Self-Employed Youth – Women*. The overall Self-Employment rate on average is slightly higher for

non-wealth tax countries compared to wealth tax countries. Interestingly, the Self-Employment rate for youth in men and women on average in wealth tax countries were slightly higher than non-wealth tax countries. One hypothesis for this reason is that Self-Employment offers greater opportunities for a reduction in the burden of taxation. In an OECD study in 2018, it found that the impact that tax policies can have an impact on Self-Employment. OECD countries where the incidence of Self-Employment is particularly high are often those where the tax wedge between Self-Employed and employees are larger, allowing in most countries, the possibility to deduct some form of business expense or investment from Self-Employed income subject to personal income tax. In the Netherlands for instance (a wealth tax country), a large gap between the treatment of employees and Self-Employed have had a strong influence on the rising incidence of Self Employment.

There is a larger difference for women in self-employment rates with more women in self-employment in non-wealth tax countries compared to wealth tax countries. In a study by the IMF on Gendered taxes: The interaction of tax policy with gender equality, the paper found that on labor taxation (employment income), household taxation discourages secondary earners (mostly women) from taking up employment as their combined income would result in a higher tax bracket and purchase household services with after-tax earnings. As a result, the secondary earner or spouse, would not work and perform household services. Much less research has been undertaken on capital income and wealth taxation and so it is inconclusive as to why non-wealth tax countries in this study showed a higher rate of Self-Employment in women compared to wealth-tax countries. One hypothesis building on the IMF study for labor taxation, could be that the higher level of tax incurred because of the wealth tax on households discourages women to be employed and Self-Employed. On labor taxation, the paper found that it was a well-

established policy advice to move from household to individual taxation to avoid high marginal tax rates on secondary earners that discourage them from taking up employment (Baker, Mourougane, Fulop, & Égert, 2018).

The Self-Employment rates with employees and without employees for men and women were at similar % rates for non-wealth tax countries and wealth tax countries, however the Self-Employment rates with employees were slightly higher in wealth tax countries compared to non-wealth tax countries, with the opposite result for Self-Employment rates without employees. This finding was consistent with Hansson's 2008 study where he found that empirically, there were consistent indications of small negative impact of wealth tax on Self-Employment, whether other factors such as attitudes toward risk, overall business friendliness and labour market institutions that vary across countries are likely to be more important than the wealth tax (Hansson, 2008).

There was a higher Self-Employed- manufacturing as a % of Self-Employment rate in non-wealth tax countries compared to wealth-tax countries, and vice versa for self employed – services as a % of Self-Employment rate. In an OECD report (2018), *The Role and Design of Net Wealth Taxes in the OECD*, the report found that wealth taxes can harm risk-taking and entrepreneurship. One hypothesis as to why non-wealth tax countries have higher manufacturing self employment compared to services is that manufacturing requires a higher level of capital (i.e., to purchase machinery, plants, inventory), whereas services would not need a comparably higher amount of capital. As wealth tax is taxed on the underlying assets, this may discourage potential entrepreneurs from pursuing manufacturing in the wealth-tax country and emigrate to a non-wealth tax country to pursue manufacturing.

Interestingly, there was higher Self-Employment rates with employees in wealth tax countries for men and women than non-wealth tax countries, and the opposite for Self-Employment rates

without employees. One hypothesis could be that the higher wealth tax may encourage entrepreneurs to invest in the firm and employ employees in the company to reduce the tax value of the entrepreneur's wealth. In a study, the results indicated that the wealth tax had a positive relationship between wealth tax levels and employment growth in small and medium sized family-run businesses. The positive employment was rationalized by the fact that wealth tax strengthens economic incentives to invest in assets that reduce taxable wealth and reduce taxes, as payroll expenses and salaries paid to employees do not contribute to the addition in total assets (Bjørneby, Markussen, & Røed, 2020).

Event Study

Upon the repeal of France's wealth tax in 2018, there was an increase in new firms, investment, and new business density rates. The more notable change was France's Self-Employment rate—Services and manufacturing as a % of Self-Employment for women, where there was a decrease in Services as a % of Self-Employment from 2018-2019 and an increase in Manufacturing as a % of Self-Employment from 2018-2019 on the other hand. This is consistent with the findings in the longitudinal study where non-wealth tax countries had a higher manufacturing Self-Employment rate compared to services then wealth tax countries.

In the event study for Colombia, upon the adoption of the wealth tax in 2019, there was a noticeable decrease in new firms, investment, and new business density rates. The Self-Employment rates fell during the year of adoption and recovered slightly in the year after 2019.

In comparing the two countries, there was a positive increase in France's entrepreneurship levels after the repeal of the wealth tax and a decline for Colombia after the introduction of the wealth tax. There could be other factors which may have affected Colombia's decline in

entrepreneurship levels (i.e., the COVID-19 pandemic), which has not been disentangled in the study.

Theoretical and Managerial Implications

In this study, the objective is to explore various entrepreneurship indices and the impact of a wealth tax on the indices using an exploratory approach. The study attempts to answer whether the imposition of a wealth tax have a positive or negative correlation with entrepreneurship in a country?

The findings from the longitudinal study showed mixed results as to whether a wealth tax had a negative or positive impact on entrepreneurship. Four main indices which the study found had an interesting relationship with wealth tax were 1) Self-Employed with and without employees, 2) Self-Employed Manufacturing versus Services sector, 3) Self-Employed rates in youth (ages 20-29) for men versus women and 4) Self-Employed rates for men versus women. The case event study has also shown that a wealth tax may not be all beneficial and resulted in France repealing their wealth tax. The findings of this study shows that previous work did not consider exploring the impact of a wealth tax on various entrepreneurship indices. The contribution of the study shows the various entrepreneurship indices that have a statistical significance with a wealth tax and the effect it has (either a positive or negative correlation). Governments and or policy makers can utilize the insights as additional considerations on the impact on entrepreneurship when considering using a wealth tax as an added revenue source tool.

Utilized in moderation, wealth tax may increase employment rates. Promoting entrepreneurship is an important policy objective, however, with growing wealth inequality, a fairer and equitable distribution tool is also being demanded by constituents. A wealth tax may be implemented for good intentions such as more equitable distribution of taxes but may have the unintentional effect

of discouraging entrepreneurship. Therefore, a tailored tool will need to be contemplated by policy makers to balance the many factors or could be more harmful to the country than the benefits.

Limitations and Future Directions

The study utilized data from the World Bank and OECD and was limited to OECD countries.

There are instances in which data was not available in the data set by various countries. As the study utilized the average of wealth tax and non-wealth tax countries, this may have impacted the averages and the comparison of the two different groups may not be accurate. Likewise, some countries did not have the data in the OECD database for some of the entrepreneurship indices and therefore would have impacted the average numbers. The study was also limited from 2010 to 2020 to the 29 OECD countries, of which seven have wealth tax.

The study also did not consider other factors which may have impacted the entrepreneurship indices and have used a simple comparison of averages over 10 years. The study could trigger for future research on the impact of a wealth tax on the specific entrepreneurship indices and understand more in detail why there is a positive or negative impact. Further research could be done to understand more about the indices explored in this paper: a wealth tax on entrepreneurship by gender, the impact of the wealth tax on various industries (in the study only manufacturing and services were studied), or the impact of wealth tax on employment and job creation.

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