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PRODUCTIVITY AND FINANCE: THE INTANGIBLE ASSETS CHANNEL (FROM VIETNAMESE SME DATA)

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Abstract
In this research, an author investigated what factors might increase firms` overall (total factor productivity) TFP productivity. There are some firms` intangible source factors that have been used in order to construct empirical models with the Vietnamese Enterprise Survey (VES) that present clear patterns influencing to the TFP. Additionally, in conclusion, some proposals have been developed in order to use more broad data sates and reflections on incentives that research and development departments could use in the future.
Keywords: TFP(total factor productivity), tangible/intangible assets, investment, SME (small and medium-sized enterprises), FDI (foreign direct investment).

UNUMDORLIK VA MOLIYA: KO`RINMAS AKTIVLAR UCHUN OMILLAR (VETNAM KICHIK VA O`RTA BIZNES MA`LUMOTLARIDAN FOYDALANIB)

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Annotatsiya
Ushbu tadqiqotda muallif firmalarning umumiy (umumiy omillar unumdorligi) TFP unumdorligini oshirishi mumkin bo'lgan omillarni tahlil qilingan. Vetnam korxonalari tadqiqoti ma`lumotlari (VES) yordamida TFPga ta'sir qiluvchi omillarni o`rganishni taqdim etuvchi empirik modellarni yaratish uchun firmalarning nomoddiy manba omillari qo'llanilgan. Bundan tashqari, xulosalar qismida, tadqiqot va ishlanmalar bo'limlari kelajakda foydalanishi mumkin bo'lgan kengroq ma'lumotlar bazasi va rag'batlantirish bo'yicha mulohazalardan foydalanish maqsadida ba'zi takliflar ishlab chiqildi.
Kalit so`zlar: TFP (umumiy omillar unumdorligi), moddiy/nomoddiy aktivlar, investitsiyalar, SME (kichik va o'rta korxonalar), FDI (to'g'ridan-to'g'ri xorijiy investitsiyalar).

ПРОИЗВОДИТЕЛЬНОСТЬ И ФИНАНСЫ: КАНАЛ НЕМАТЕРИАЛЬНЫХ АКТИВОВ (ПО ДАННЫМ ВЬЕТНАМСКИХ МСП)

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Аннотация

В данном исследовании автор исследовал факторы, способные повысить общую производительность факторов производства (совокупную производительность факторов производства) компаний. Некоторые нематериальные факторы, влияющие на деятельность компаний, были использованы для построения эмпирических моделей на основе Обследования предприятий Вьетнама (VES), которые демонстрируют чёткие закономерности, влияющие на совокупную производительность факторов производства. Кроме того, в заключение были разработаны некоторые предложения по использованию более широких наборов данных и размышлений о стимулах, которые отделы исследований и разработок могли бы использовать в будущем.

Ключевые слова: СФП (совокупная производительность факторов производства), материальные/нематериальные активы, инвестиции, МСП (малые и средние предприятия), ПИИ (прямые иностранные инвестиции).

Introduction

Some economies are facing a deep downturn due to the pandemic and ongoing conflicts, maintaining economic stability remains a core objective of national economic policies. It has been proved that in a such new-tech era improving economies is more complex that in previous centuries.

While firms once relied primarily on natural and labor resources, they now increasingly depend on digital technologies alongside traditional inputs. Intangible assets are widely acknowledged as the main source of future growth. Aside from investments in Reaserch and Development, patents or software, which are key drivers of innovation, other types of intangible assets, such as databases, designs, managerial skills, and organisation and distribution networks, have become increasingly relevant. Lilas Demmou (2021a)

Many high-productive firms could hold some economies, and it is true that new innovations have an immersive effect on changing the global economic environment. It means that at micro level all enterprises, now, have focused on using more crucial factor productions for being competitive. Using such imputs, namely educated workers, softwares, production designs, marketing strategies are not cheap for all firms, that majority of them could face challenges to get these resources. These strategic investments are at the heart of firms’ competitiveness and productivity, largely due to their complementarity with digital technologies and their positive contribution to MFP. They also have the potential to increase the resilience of economies to large shocks exploiting the flexibility that the use of digital technologies provides (e.g., via teleworking arrangements and swift reorganisation of productive activities). As a result, the shift in the composition of investment toward intangible assets has the potential to reverse the productivity growth slowdown observed in many advanced economies and to foster the recovery following the COVID-19 shock.Lilas Demmou (2021a)

The steps of this paper continues as follows. Section 2 presents the financing firms channels framework and monetar perspectives. Section 3 presents the data and the economic variables, thereby introducing a few descriptive statistics. **??**The empirical specifications and the estimation results will be illustrated in Section 5. Section 6 introduces some personal opinions based on econometric analyses and closes the work.[1]

Related Literature

According to the theoretical literature, there are several factors which can affect firm productivity and growth. In this section, we are trying to understand the externalities that are useful for explaining our empirical model analysis. First, we use assets (tangible and intangible) explanations then we mention all the factors namely investment, patents, bank loans, foreign direct investment.

1.1.Firm assets

Using simple terminology itself tangible assets are that you can touch them such as buildings, machines, raw materials and so on.

PPE (Property, Plant, and Equipments) are tangible items that are held for use in the production or supply of goods or services, for rental to others, or for administrative purposes and are expected to be used during more than one period.[2]

Intangible assets, however, are more intellectually recognized inputs that are used in production processes.

In 2014 Brynjolfsson and McAfee published "The Second Machine Age" underlining that ≪Production in the second machine age depends less on physical equipment and structures and more on the four categories of intangible assets: intellectual property, organizational capital, usergenerated content, and human capital≫ (Bryn-jolfsson and McAfee, 2014)di Marco Pini (2022).

In the current Knowledge economy and Fourth Industrial Revolution intangible assets are increasingly representing a determinant resource for development and competitiveness all over the world (Haskel and Westlake, 2018). In particular in the current Covid period, in which the role of intangible assets as factors increasing resilience and recovery of economies shock has strongly emerged, also leveraging their positive complementarity with digital technologies.

The investments in intangible assets are growing over time faster than tangible ones across countries. Thus, intangible assets play a crucial role in understanding several policy issues, such as innovation, growth, management, and finance, as recognized by international agencies such as OECD (OECD, 2011).

At the firm level, digitalization, servitization and intensified global competition are amplifying their importance: around 80 percentage of the firm's value is generated by the intangible assets (Vodak, 2011).GaetanoFaustoEsposito-etal (2024a)

Intangible assets are key in the modern economy as drivers of the productivity of firms, and ultimately for the competitiveness of economies, as shown by a couple of recent papers (ThumThysen et al., 2019; Corrado et al., 2018; Bauer et al., 2020; Adarov and Stehrer, 2019; Cincera et al., 2020).

Intangible assets play a role in digitalisation (e.g. software, databases), and innovation (e.g. research and development, design, patents) and embody the business knowledge necessary for the effective functioning of firms (e.g. market knowledge, organisational knowledge, and training for employees). Furthermore, the importance of an intangible asset is amplified by its complementarity to other intangible and tangible assets (Thum-Thysen et al., 2022) explained in the Altomonte C (2022a)

[2] KPMG (2020) ://assets.kpmg.com/content/dam/kpmg/in/pdf/2020/02/chapter-04-tangibles-intangiblesassets-ind-as-implementation-guide.pdf

Concentrating on our essay title, now, we explore previous works about intangibles that improve productivity. Intangible assets have specific characteristics that make their financing more difficult than that of tangibles1. The empirical strategy is structured in three complementary parts (Box 2). Upfront, building on Demmou, Stefanescu and Arqui´e (2019), a sectoral-level analysis draws the attention to the macroeconomic implications that financial development has for intangible-intensive sectors, pointing to possible imbalances that are now being amplified by the increasing use of new, often intangible-based, technologies. The second part (based on Demmou, Franco and Stefanescu, 2020) and the third part deal with the two distinct channels that could drive the aggregate results:

- a within-firm effect, if financing frictions dampen firms' productivity more in sectors intensive in intangible assets, and
- a between-firm (allocative efficiency) effect, if financing frictions hinder aggregate productivity by impeding the most productive firms within each industry to grow and gain market shares, especially in intangible-intensive industries.Lilas Demmou-etal (2020a) Results at the sectoral level confirm that intangible-intensive sectors benefit relatively more from financial development (Table 1). The magnitude of the differential impact is large.

A one-standard deviation increase in our financial development index – approximately equivalent to moving from Greek to Swedish levels – implies a productivity improvement that is 3.5 percentageage larger in intangible-intensive sectors compared to traditional ones (Table 1, specification 1). Figure 4 shows the excess increase in productivity that a country would experience in intangible-intensive sectors when moving from a given level of financial development to the highest observed level: the simulation implies a productivity improvement that is approximately 9 percentageage larger in intangible-intensive sectors compared to traditional ones for low financial development countries and around 4 percentageage larger for countries starting from an average financial system development.

The within firm channel operates via the ability of firms to finance their innovative projects and thus increase their productivity, either by improving the quality of their products or the efficiency of their production processes. Limited internal funds and/or constraints on external financing could impair the implementation of firms' productivity-enhancing strategies, particularly in intangible-intensive sectors, due to the additional difficulty to finance intangibles.

Relying on financial ratios and their combinations through indices to capture financial constraints at the firm level, the baseline findings confirm that firms in intangible-intensive sectors benefit relatively more from sound financial conditions (Table 2). These results, which are consistent with respect to a wide range of robustness checks, hold independently of the firm-level financial constraints measure chosen and further support the claim that intangible intensity captures an important dimension of the relative exposure of industries to financing frictions (see Table C.1 and Table C.2) Lilas Demmou-etal (2020b)

Intangible intensity is defined as the ratio of intangible assets to total assets (tangible and intangible). To measure it at the sector level, we exploit Compustat data on U.S. listed firms and follow the methodology proposed by Peters and Taylor (2017), according to which intangible capital is defined as the sum of knowledge and organizational capital.38 Knowledge-based capital includes a firm's capitalized spending to develop knowledge, patents, or software, while the organization-based is computed by capitalizing a fraction of the Selling, General and Administrative expense (SG and A), which includes advertising to

build brand capital, human capital, customer relationships and distribution systems. Calculations at firm-level are performed over the 1990-2006 period to avoid incorporating the distortionary effects of the financial crisis, characterized by a sharp worsening of aggregate financial conditions.Lilas Demmou-etal (2020c)

A number of theoretical and empirical studies corroborate this narrative. For instance, when faced with financial constraints, firms cut their investment in Research and Development to reduce liquidity risks (Aghion et al., 2010; Aghion et al., 2012) and, more broadly, invest less in intangibles (Garcia-Macia; 2017; Duval et al., 2020), especially if they are young and small (Brown et al., 2009; and Hall and Lerner, 2010). Consistently, they are more likely to invest in tangibles in order to increase their debt capacity, providing a guarantee and an enforceable outside option for creditors (Almeida and Campello, 2007; Campello and Hackbarth, (2012) Lilas Demmou (2021b).

Tangible intensity declined during the crisis in the EU15 countries. (Figure 1), while during the late recovery (2014-2017) it rebounded somewhat. Nevertheless, average tangible intensity is lower at the end of the sample period than before the crisis. By contrast, intangible intensity in most assets increased during the crisis and continued throughout the recovery. Exceptions include own-account organisational capital and training. This resilience of intangible assets to the financial crisis is consistent with earlier findings at the country level (Corrado et al., 2018).

As value added decreased substantially during the financial crisis, the fact that intangible investment intensity did not decrease still means that intangible investment declined from 2008 to 2009, especially if we compare it to the pre-crisis trend. Thus what we find here is that intangible investment declined more or less proportionally with value added, while the drop was bigger in the case of tangible investment.

Crass and Peters (2014) study the impact of Research and Development, design and licenses, patent stock, training, high-skilled labour, and advertising and marketing, based on 11,021 firm observations for the time period 2006-2010, utilizing an Olley and Pakes (2006) estimation approach. An updated econometric estimation is performed by Rammer and Peters (2016) for the time period 2006-2014 based on 17,804 observations.

In contrast to Crass and Peters (2014), they also include software as an additional intangible capital indicator. Both studies find that intangibles related to economic competencies (advertising and marketing and training) have the greatest impact on the firm-level labour productivity. Intangible capital related to innovative property also positively contributes to firm-level productivity, but on a smaller magnitude.

In the studies that include both computerized information and innovative property (Rammer and Peters 2016, Kaus et al. 2020), innovative property turns out be more important than computerized information for firm-level productivity. Interestingly, none of these three studies finds a significant impact of patent stock on productivity, which suggests that the positive impact of patent stock on productivity found in other studies (Griliches 1984, Bloom and van Reenen 2002) may be due to the absence of other intangible capital types. Roth Felix (2021)

It is interesting to see how short-term developments around the GFC fit into a longer-term picture. We observe, since 1995, an upward trend in intangible intensity. This trend was mainly unaffected by the financial crisis (see Figure 2 where we show the estimated pre-crisis trend since 2001). Indeed, the deviation from the pre-crisis trend is not negative for

the aggregate intangible asset as opposed to the tangible asset, where it is significantly negative for 2010 (see Table 1). This finding is consistent with previous results in the literature where it is found that intangible investment is relatively insensitive to aggregate demand (Thum-Thysen et al, 2019) Altomonte C (2022b).

A large literature emphasizes the role of a broad range of intangible assets in stimulating productivity growth at the firm level. Comparing the findings of several studies, Hall (2011) highlights that, even tough measures of innovation are still imperfect, there is evidence of a positive relationship between intangible capital, innovation, productivity and growth. The effectis stronger with respect to product rather than process innovation.

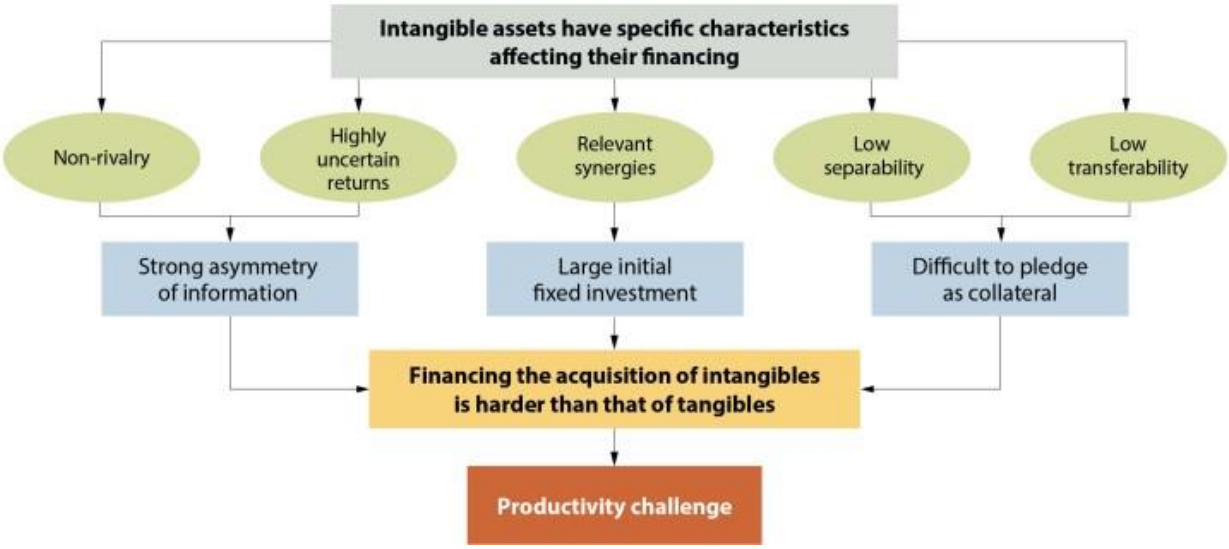

Figure 1: Characteristics of intangibles

- The empirical findings on the latter are relatively noisier, because revenue productivity measures incorporate market-power. It follows that firms' revenue productivity falls when they become more efficient if they operate in the inelastic portion of their demand curve.

By developing a model of endogenous productivity change resulting from investment in knowledge and by deriving, in this setting, a novel estimator for production functions based on panel data on Spanish firms, Doraszelski and Jamandreu (2013) provide evidence that Research and Development plays a decisive role in determining differences in productivity across firms and the evolution of firm level productivity over time; firms that perform Research and Development have a distribution of expected productivity that stochastically dominate the one of companies that do not perform it.

Using data on German manufacturing firms, Crass and Peters (2014) find that Research and Development and human capital have a strong positive effect on productivity that have worked on Lilas Demmou-etal (2020a).

1.2. Policy

Creating financial resources for a firm growth is not always a case, ensuring adaptable economic policy matters. Recognizing cross-country differences in the structure of financial systems, the policy discussion focuses on the three main sources of external finance available to firms – government support, equity financing and bank credit.

The increasing share of investment devoted to intangibles and the relatively small portion of it that is financed by bank lending potentially weakens monetary policy

transmission channels, as investment is less responsive to changes in interest rates (Crouzet and Eberly, 2019).

This tilting towards tangible investment may be even more widespread for at least two reasons. First, intangible investment is often irreversible, takes more time to translate into sales compared to physical capital and has more uncertain returns, so that it appears particularly unappealing in the current context. The other potentially aggravating factor is linked to the necessarily loose monetary policy implemented to contrast financial markets turmoil, which may favour a reallocation of resources towards collateralized tangible-intensive firms; indeed, while a low level of interest rates encourage investments across the board, intangible-intensive firms would be relatively disadvantaged due to the low collateral value of their assets and the higher difficulties to accumulate savings in a low interest rate environment (Caggese and Perez-Orive, 2019).

The available evidence highlights that the global shift towards intangible-intensive growth creates new financing challenges for firms, which are likely to have been exacerbated by the COVID-19 shock. In particular, the specific financing frictions faced by intangible-intensive firms imply that they might not be able to exploit their growth opportunities in full, and the higher cost of capital might deter the entry of new innovative firms.

Governments finance a portion of business sector investment in intangibles, either directly through transfers, grants and loans or indirectly through tax incentives. Government support schemes can help reduce the gap in the financing of intangible assets by allowing companies to invest in innovative activities with potentially relevant economy-wide positive spillovers.

Moreover, following the COVID-19 outbreak and the strong fiscal stimulus packages adopted to counteract the economic consequences of the pandemic, governments could play an even broader role in facilitating intangibles financing and the shift towards a knowledge based economy.

Research and Development tax incentive schemes are a common tool widely used by governments to support innovation. Overall, they relax financial constraints affecting intangible investment (OECD, 2020c), by reducing its cost for the eligible company and thus fostering within-firm productivity. Indeed, Research and Development tax incentives have a stronger productivity impact in sectors dependent on external finance, on financially constrained firms as well as on small and young companies with previously relatively low levels of Research and Development investment (Kasahara et al., 2014: Kobayashi, 2014; OECD, 2021a)Lilas Demmou (2021a).

Since human capital proves to be the factor triggering the other types of intangible assets, policies should primarily concentrate on this issue. Firstly, policy should support life-long learning (training in adulthood leveraging also on technologies that offer low-cost and convenient ways of learning) favoring the entry of people in the workforce, and, in doing so, avoiding problematic guessing of what skills will be the more valuable in the next decades. Secondly, they should support education of young people focusing more on what we teach than how much we teach. Specifically, it is crucial to encourage students and workers to learn not only occupation-specific skills but also soft-skills to stimulate creativity and innovation, with particular regard to collaborative problem-solving skills that are useful in the new economic models based on networking (Haskel and Westlake, 2018).Policy mentors

should look to the networks where the firm operates instead of relying solely on its economic sector Gaetano Fausto Esposito-etal (2024b).

Existing results in the literature show that intangible investment is less sensitive to long-term interest rates (Thum-Thysen et al., 2019) and less influenced by monetary policy (Do¨ttling and Ratnovski, 2020).

Potential reasons include that intangibles are usually financed more by internal sources or equity instead of debt, and that the higher depreciation rate of intangible assets weakens the link between interest rates and the user cost of capital. At the same time, the degree of financial development has a bigger impact on labour productivity growth in intangible-intensive industries, especially if they are more dependent on external finance (Demmou et al., 2019).

The explanation is that as intangible investment faces stronger informational asymmetries and is harder to value, it is subject to more severe financial constraints. Financial frictions in intangible sectors have been a barrier to productivity growth, especially in financially less developed countries. This finding is underpinned by firm-level evidence as well (Demmou et al., 2020).

In a recent paper, Segol et al. (2021) using an EU-wide firm-level investment survey, document that insufficient loan amounts, high lending rates and more stringent collateral requirements have a detrimental effect on intangible investment intensity. In other words, policy on intangible assets require a strong nexus between institutional settings and industrial policy (Rodrik, 2004; 2008), because nowadays we are shaping a new model of economy where the target is not only the growth of the tangible production, but the way in which we produce looking at a sustainable growth resulting from a broader institutional strategy (Haussman and Rodrik, 2006; Haussman et al., 2008; Rodrik, 2004)Peter Bauer (2022).

Data and descriptive statistics

1.3. Firm level data

Our data come from the Vietnamese Enterprise Survey (VES) annually conducted by the General Statistics Office (GSO) since 2000.The dataset includes all formal sector firms with more than 10 employees and a random sample of smaller firms, both private and state-owned. The VES covers all economic sectors, including agriculture, industry and services,[3] however we focus on manufacturing firms only, excluding those in peculiar sectors such as Tobacco as well as Coke and Refined petroleum. We have undertaken a number of measures to ensure that the data at the individual firm level are consistent both within and across years.

These include correcting changes in the coding over time of key variables such as industry and province. Each manufacturing firm in the VES dataset is classified as belonging to a 4-digit industry following the Vietnam Standard Industrial Classification (VSIC). There are two versions of the VSIC: VSIC 93 (ver. 1993) and VSIC 07 (ver. 2007), which correspond to the United Nation's ISIC rev. 3 and ISIC rev. 4, respectively.[4] In order to build our panel,

[3] There are currently 34 industrial sectors divided into three industrial sections: 5 in Mining and Quarrying, 24 in Manufacturing, and 5 in Electricity, Gas and Water Supply.

[4] The old version (VSIC 93) was applied to enterprises surveyed from 2000 to 2005, while the new version (VSIC 07) has been applied starting from 2006.

we apply a probabilistic routine, developed by Le et al. (2019), to harmonize the two different classifications.

Panel A of Table 1 shows the name and the notation of each firm-level variable, together with the relative source and the associated time coverage.

As far as the province classification is concerned, within the period under analysis provincial boundaries has been redrawn. Three new provinces were created between 2000 and 2003, and Hatay was merged into Hanoi in 2008. Starting from 2004 onwards, the GSO has applied a new system of codes, referring to 64 provinces, which is different from the one used before with 61 provinces.

The VES provides information on a number of quantitative variables including net revenues, net profits, value added, fixed and total assets, total debts, the number of employees, and age. This information allows to construct several firm-level characteristics to be employed in the empirical analysis.

Empirical model

To analyze the relationships between intangibles, productivity and some external factors, we look at the effects that intangible-oriented factors have on firms' productivity and we will look it in different point with some dummy variable. Following previous empirical analyses, such as , the baseline specification takes the following form:

$$\ln y_{f,t} = \alpha + \beta \ln FDI_t + \beta_1 Leverage_{f,t} + \beta_2 inv(RnD)_t + \beta_3 inv(human)_t + \beta_4 inv(patent)_t + \varepsilon_{f,t} \quad (1)$$

Table 1

Variable description, source and time coverage

Variable name	Notation	Source	Year coverage
	Panel A - Firm variables		
Total factor productivity	$Tfp_{f,t}$	VES	2000–2012
D Investment	$D_f Inv$	VES	2007
InvestmentRnD	$inv(amountRnD)$	VES	2015
Investmenthumantrainin	$inv(amounthuman)$	VES	2005–2015
Leverage (Debts/Total assets)	$Leverage_{f,t}$	VES	2006–2014
Investment patent	$inv(amountpatent)$	VES	2005–2015
Foreign Direct Investment	$lnFDI$	VFDI	2000–2014
D Loan problem	$D_f LP$	VES	2005–2015
D Regulation problem	$D_f RP$	VES	2005–2015

Notes: The subscripts *f*, *i*, *s*, *p* and *t* (if applicable) denote firm, 4-digit industry, 2-digit sector, province and time, respectively. RnD is research and development.

Table 2

Financial constraint and firms' productivity

Dep. Var.		ln$Tfp_{f,t}$
	(1)	(2)
lnFDI_t	0.115***	0.114***
	(0.004)	(0.0038)
$Leverage_{f,t}$	0.573***	0.568***
	(0.280)	(0.280)
$inv(RnD)_t$	0.00065**	
	(0.00016)	
$inv(human)_t$	0.026***	
	(0.0005)	
$inv(patent)_t$	0.00002***	
	(0.0004)	
allinvestment		0.0007***
		(0.00014)
DfR		0.432***
		(0.0774)
Adj. R^2	0.0883	0.0894
No. of Obs	13,597	13,597

Notes: Observations are at the firm–time level.

where $y_{f,t}$ is either the (log) total factor productivity or the (log) profits of firm *f* at time *t*. The variable lnFDI_t is the measure of foreign direct investment firms received at *t* and $Leverage_{f,t}$.

Other variables are different investments that have direct effect in to firm productivity which are intangible-oriented. Our primary interest is estimating the coefficients of *β*s, which captures the percentageage change in firm-level productivity. Following our insights from Section 2, we expect that investments and lnFDI will increase productivity ($\beta < 0$), as firms can invest finance into intangible assets. The variable of Leverage is, on the other hand, that give some critical information about firm's financial condition as Leverage=Debts/Total assets. Although we use our second modes is that

$$\ln y_{f,t} = \alpha + \beta \ln FDI_t + \beta_1 Leverage_{f,t} + \beta_2 D_f^R * allinvetment + \varepsilon_{f,t} \quad (2)$$

where $y_{f,t}$ is either the (log) total factor productivity or the (log) profits of firm *f* at time *t*. Dummy D^R is regulation problems that firms face (if D^R * *allinvestment* = 0 as a financial constraint)The variable lnFDI_t is the measure of foreign direct investment firms received at *t* and $Leverage_{f,t}$ with *allinvestment* (where : inv(RnD)$_t$ + $inv(human)_t$ + $inv(patent)_t$).

Results

Our two type model coefficients have been appeared already in the table 2. Where almost all factors coefficients are valid except for the first model's $inv(patent)_t$ is invalid because p value is 0,967 where (p > 0,005).

Regarding to the first model if lnFDI_t will increase by 10 percentage, tfp then can increase by 1.15 percentage. Ten unit change in the $Leverage_{f,t}$ variable (here residual

capital) will effect positively and rise 5,73 percentage. In the same way because all investment factors(where Research and Development, Human training, Patents) are all money unit, so they can also increase productivity hundred dollars (100 dollars and/or 100 units) increase Research and Developmnet expenditure will increase tfp by 0,065 percentage. Human training and Patents (expenditures) will change productivity positively by 2,6 and 0,002 percentage respectively (0,002 Patent expenditures is invalid because p value greater 0,005).

In the second model, however, there are not greater differences that we have added all investment expenditures as an *allinvestment* (where : inv$(RnD)_t$ +*inv*$(human)_t$ +*inv*$(patent)_t$). Here also simultaneities are the same even we have used dummy D^R variable. 100 percentage increase in *lnFDI* will increase productivity 11,4 percentage. if *Leverage* increased 10 unit (capital), can rise tfp by 5,68 percentage. Interestingly, if firms have financial challenges where D^R is a dummy regulation problems (that movement from 0 to 1) here as a 1 digit (having a problem), could stimulate productivity positively (100* β) by 43,2 percentage. Where all investment patterns rise 100 dollars, will increase productivity by 0,7 percentage.

Conclusion

As we have mentioned before in this Section 2. The current economic environment cycle has worked in our econometric models as all intangible investment could rise productivity as Within firm productivity effect and/or reduce it (as Between-firm productivity effect).

Between-firm productivity effect: The between-firm channel operates via the ability of the most productive firms to attract more resources and gain larger market shares than the least productive ones. Overall, consistent with our priors, higher productivity is generally associated with stronger firm-level employment growth: high productivity firms have on average an employment growth that is 0,9 percentage point higher than low productivity firms (Table 3, specification 1).11

Financial conditions are a critical factor that may influence the continuous reallocation process among producers with different productivity levels and growth potential (Midrigan and Xu, 2014; Moll 2014; Larrain and Stumpner, 2017; Gopinath et al., 2017). The empirical analysis shows that a deep financial system tends to reduce the barriers impeding an efficient allocation of resources, reinforcing the link between productivity and firm growth (Table 3, specification 2). Also, the impact of financial development on reallocation is larger in intangible-intensive sectors, as evidenced by the positive and statistically significant coefficient on the triple interaction between lagged productivity, intangible intensity and financial development (Table 3, specification 3). Lilas Demmou (2021c)

Government policies in knowledge-intensive economies focus on supporting Research and Development, both through grants and tax incentives. We found that other intangibles are also major drivers of productivity, even often exceeding the role of Research and Development in many sectors, particularly in services. A more consistent policy approach could contribute to fully realising the productivity potential of firms by simultaneously stimulating investment in hardware, software, and various other intangibles (see Brynjolfsson, Hitt, and Yang 2002; Brynjolfsson, Rock, and Syverson 2019).

Second, to better inform policy discussion about intangible investments it is essential to update national accounts statistics by incorporating all types of intangibles as assets. For

this purpose, a comprehensive set of statistics on investment in intangibles is required. Currently, only data on two types of intangibles are systematically collected as part of official business statistics: Research and Development and software and databases. There is no internationally harmonised set of statistics for measuring investment in economic competencies such as firm-specific skills or branding and reputation of firms.Felix Roth (2021).

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