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Procurement of multilateral banks in Europe: Italian specificities and policy implications

**Valentina Meliciani, Luca Policino
Roberto Urbani**

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Procurement of multilateral banks in Europe: Italian specificities and policy implications

Roberto Urbani, Valentina Meliciani, Luca Policino

1 Introduction

International public procurement by multilateral banks has consistently been a competitive market for Italian companies. Procurement is defined as the acquisition of goods, works, or services by a procuring entity, generally using public funds (World Bank, 2020). Objectives involve providing aid to the public sector, funding the establishment of businesses to enhance the single market's functionality and financing projects of shared interest among multiple member states (Artige et al, 2013; Clifton, 2014).

In this sector, the World Bank stands out among the Multilateral Development Banks (MDBs) due to its extensive geographical reach, being the first of its kind, and serving as a model for best practices adopted by other MDBs. Winning World Bank procurement contracts holds significant potential for companies seeking to expand their business, internationalize their operations, and diversify their target market. Through them, firms gain access to new markets, clients, and revenue streams while reducing their vulnerability to localized economic challenges, achieving more stable growth and enhancing their reputation and credibility.

This brief presents an analysis of Italian firms' participation in tenders funded by the World Bank since 2000. We aim to identify their strengths in international public contracts to guide policymakers in supporting business internationalization and enhancing Italy's international competitiveness, which is the key objective of the National Recovery and Resilience Plan (NRRP). To understand the peculiar strengths and weaknesses of Italian firms, we conducted a comparative analysis of Italian firms and their peers in other EU countries, with a particular focus on French ones. Previous research indicates that the decline in Italian firms' contract value share was mainly due to larger contracts in the civil works sector in emerging countries where Italian firms already had a strong presence (Piga, 2007). In these countries, Dollar & Levin (2005) demonstrated a link between project success and institutional quality, an external factor that is not always controllable by firms.

To do so, we conducted a macro-level evaluation of contracts won and a micro-level examination of individual contracting firms. By utilizing various indices and metrics, we provide a comprehensive understanding of the procurement landscape for these countries.

Our study reveals that Italian companies are more concentrated in their participation in World Bank procurement contracts compared to their peers in other EU countries. In fact, while there are virtuous cases of Italian firms winning projects with high economic value, they are few in number. To reduce concentration, policymakers should promote greater participation of Italian firms in WB projects because increased competition and diversion among Italian companies participating in these projects would maximize the benefits of international development opportunities for the Italian economy. This can be achieved through policies that focus on outreach, training, capacity-building initiatives, partnerships with educational institutions, and access to finance.

2 Comparative analysis of European Union firms

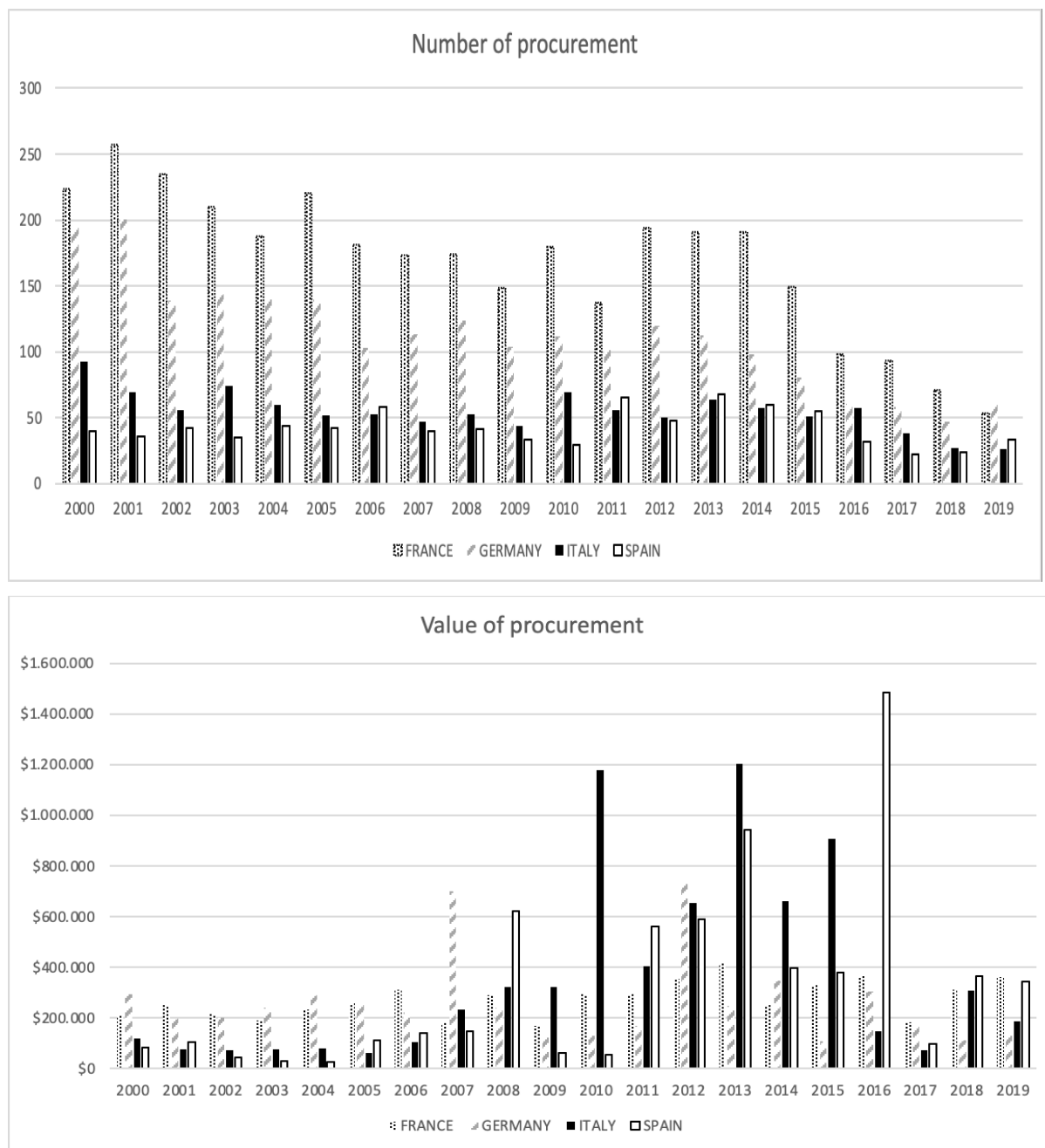
In the competitive landscape of international procurement, understanding the dynamics and characteristics of nations and firms winning contracts is essential for fostering economic growth and global collaboration. This section aims to provide a comprehensive analysis of the World Bank contracts awarded to Italian firms in comparison with other European countries. We then focus on Italian and French firms from 2001 to 2022, since they represent two distinctive models. By examining the number of contracts won, the total value of contracts awarded, and the market concentration, we will uncover the underlying trends and strategies of firms from these two European Union countries.

2.1 Macro-Level Evaluation: National Trends and Rankings in World Bank Contract Awards

Evaluating the number of contracts awarded to companies from each nation within the dataset results in a ranking based on the total number of contracts awarded and one based on the total value in U.S. dollars. Interestingly, Italy ranks 51st in terms of the number of contracts won but ranks in the top ten (4th position) in terms of the value of contracts obtained. France and Germany follow the opposite trend.

Analyzing the two distributions in more detail, the number of contracts won in the twenty-year period studied is almost always the same. It changes in some years for Italy and Spain, which alternate outperforming each other a few times from 2011 onward. Figure 3 plots the evolution of the number and value of procurement by country, revealing significant differences.

FIGURE 3. Upper panel: number of contracts awarded by the first four EU countries; **Lower panel:** Value of contracts awarded to the first four EU countries.

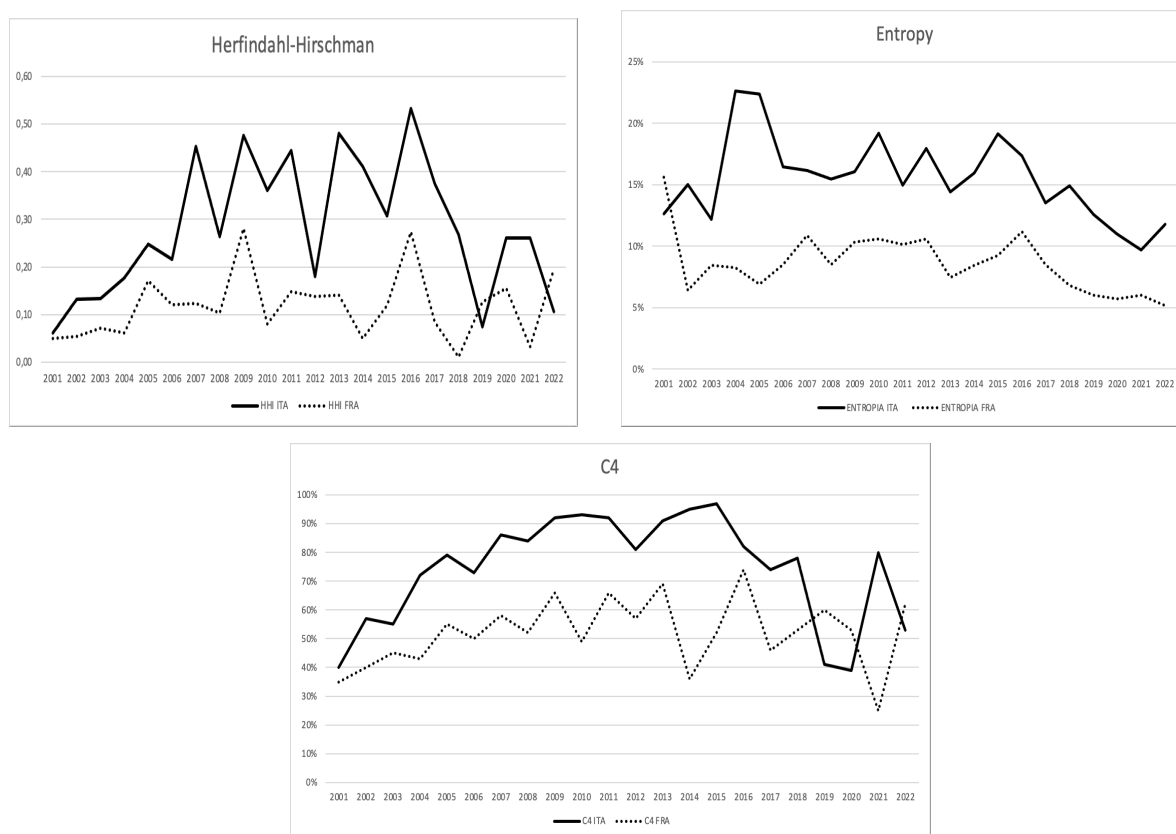


Source: Authors' calculation based on World Bank data

While Italian and Spanish companies secure a lower number of contracts but with high economic value, French and German companies follow the opposite trend, winning more contracts with a total economic value that is slightly lower. The Italian market is characterized by a high concentration of a few companies dominating both the number and value of contracts won. This concentration is supported by the Herfindahl-Hirschman Index, entropy index, and C4 index, which all indicate that Italy's market is more concentrated than France's (Figure 4).

FIGURE 4 Concentration indexes for France and Italy (2001-2022)

Note: The Herfindahl-Hirschman Index (HHI) measures market or economic sector concentration by calculating the sum of the squared market shares of individual. An HHI value of 1 represents high level of concentration, while a value of 0 represents low level. Entropy is a measure used to quantify the level of diversity or variety within a distribution of categories. The C4 index is a commonly used metric in economics to assess market concentration and competition, where a higher value indicates a greater dominance of the top four firms in the market. In the context of the presented data, entropy is calculated based on the frequency of appearance of different companies. It involves assessing the normalized probability of each company's appearance and combining it with the logarithm of that probability. This resultant entropy value indicates the contribution of each company to the overall diversity. A higher entropy value suggests a more diverse distribution, while a lower value indicates a more concentrated distribution.



Source: Authors' calculation based on World Bank data

Overall, these findings suggest that Italian companies may need to explore strategies to increase their participation and success in World Bank contracts, while also addressing the high concentration of a selected few dominating companies in the market. The next section addresses this issue by analyzing the characteristics of the winning companies.

2.2 Micro-Level Examination: Firm-Level Analysis and Market Concentration Dynamics

We conducted a micro-level analysis of Italian and French companies that won at least one World Bank procurement in the last two decades by looking at key variables, as well as regional and sectorial distribution.

The statistical analysis presented in Table 4 suggests that Italian companies are larger in size, generate higher sales and have lower investments in intangible assets than their French counterparts. The t-test, calculated on the mean, confirms a statistically significant disparity between the two countries' employee numbers, indicating that this difference is unlikely due to chance. The sales figures also reveal a noteworthy distinction, with Italian companies demonstrating a higher mean and median, indicating a potentially stronger revenue generation capacity. However, it's essential to note the substantial standard deviation in Italian sales, signifying a broader range in revenue among these firms. In contrast, French companies display more consistent sales figures. The statistics related to publications highlight a higher mean for French companies, suggesting greater research activity. However, French companies exhibit a wider variation in these variables, which may reflect a more diverse business landscape. The Return on Capital Employed (ROCE) figures indicate that Italian companies tend to have lower efficiency in generating profits from their capital investments when compared to French companies, as evidenced by the lower mean and the significant standard deviation in Italian ROCE.

TABLE 4. Key statistics of selected variables of Italian and French companies

Notes: Sales values are expressed in millions of USD. We employ a two-sample t-test with a two-tailed distribution considering unequal variance heteroscedasticity assumptions. Intensity refers to the ratio between intangible assets and turnover. Publications data are obtained from Orbis Patent.

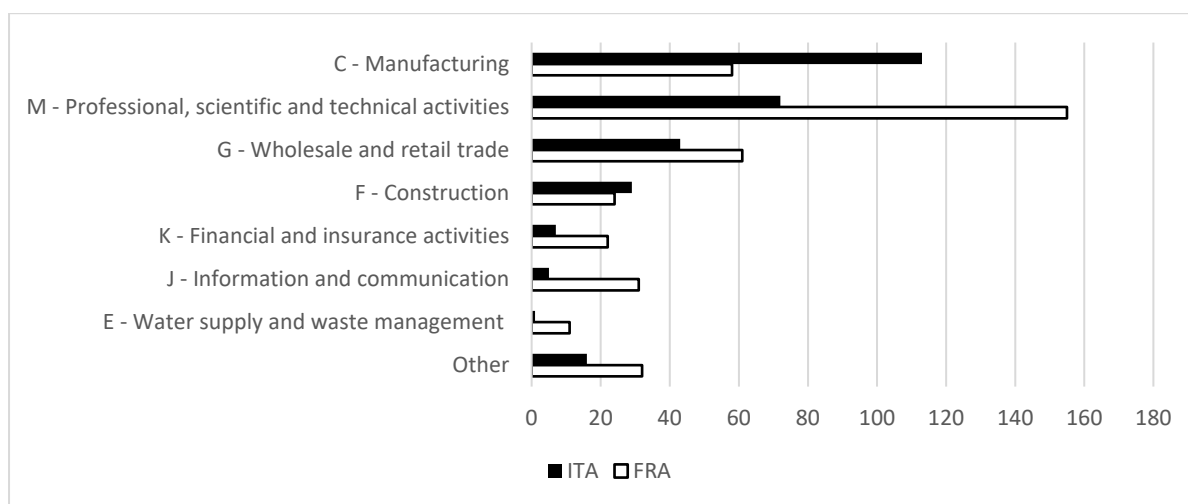
	ITA	FRA	ITA	FRA	ITA	FRA	ITA	FRA	ITA	FRA
	Employees		Sales		Publications		Intangible Intensity		ROCE	
Mean	1158	225	326	44,4	0,2	0,5	0,2	0,5	8	30
T-Test	0,007***		0,099*		0,069*		0,060*		0,017*	
Median	34	95	9,9	9,7	0	0	0	0	8	14
Standard Dev	6762	345	1565,6	85,1	0,3	0,4	0,3	0,4	37	128
Min	1	1	0	4	0	0	0	0	-286	-137
Max	81365	2132	15692,8	507,4	0,81	1,53	0,81	1,53	137	15

Source: Authors' calculation based on Orbis Bureau Van Dijk data

According to Figure 5, both countries present a similar level of industry concentration across sectors, with an HHI index of 0,22 for Italy and 0,25 for France. However, disaggregating data by sectors (according to NACE codes) unveil distinct sectoral strengths and weaknesses between the two nations concerning their participation in World Bank procurements. French companies prominently demonstrate their expertise in consulting, commerce, and manufacturing sectors, showcasing a diverse skill set across these domains. In contrast, the Italian data reveal a pronounced strength in the manufacturing sector, underscoring the nation's robust manufacturing capabilities, as well as its pivotal role in significantly contributing to development projects (F-Construction). It's important to note that while these sectors represent strongholds for both countries, the analysis also highlights relative weaknesses in other sectors, emphasizing the need for tailored strategies and targeted policy

interventions to optimize contributions across a broader spectrum of industries within the context of World Bank projects.

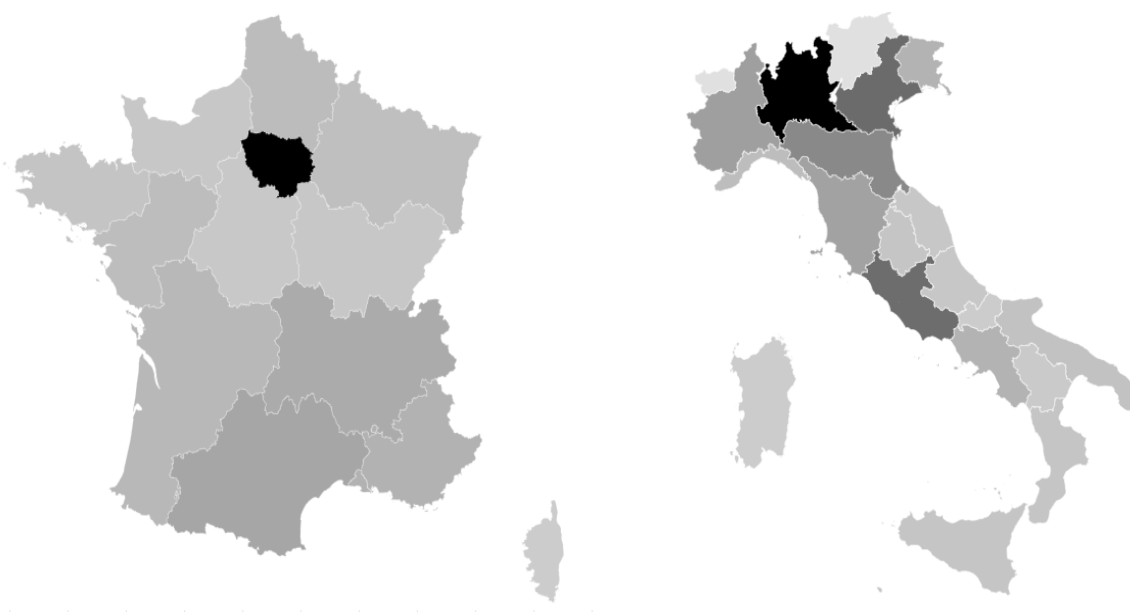
FIGURE 5. Number of Italian and French winning companies' distribution across NACE Rev. 2 main sections



Source: Authors' calculation based on Orbis Bureau Van Dijk data

Lastly, Figure 6 explores the companies' geographical distribution and a notable distinction emerges between the two nations. Italian companies exhibit a concentrated presence, primarily centered in a few regions, including Lombardy, Veneto, and Lazio. In contrast, the French landscape boasts the significant prominence of "Île-de-France." This "capital city effect" is evident in France's notably higher HHI index (0.30) compared to Italy's (0.14), signifying a more centralized distribution of international development project participants. In Italy's case, despite the concentration in certain regions, there is no equivalent capital city effect. This is because Lombardy, for instance, has a greater number of procurement companies compared to Lazio. This divergence highlights the regional dynamics at play within each country. While Italy's concentration implies specialization in specific areas, France's dispersed presence underscores the need for strategic collaboration and knowledge sharing among regions.

FIGURE 6. Number of companies awarded a WB procurement. Distribution by regions where the darker color represents a high presence of companies.



Source: Authors' calculation based on Orbis Bureau Van Dijk data

3 Discussion and policy implications

This research provides valuable insights into the dynamics of Italian participation in World Bank-funded projects and offers potential avenues for future investigation to optimize the performance of Italian firms in the global market.

The comparative analysis of World Bank contracts awarded to Italian and French firms from 2001 to 2022 reveals distinct differences in their performance and market dynamics. Italian and Spanish firms secure fewer contracts with higher economic value, whereas French and German firms win more contracts with slightly lower total value. The Italian market exhibits a high concentration of a few dominant companies in terms of both contract quantity and value. Our findings suggest that Italian

companies should consider adopting strategies to increase their participation and success in World Bank contracts while addressing market concentration among a few dominating firms.

The concentration of Italian companies in World Bank contracts suggests that policymakers should prioritize expanding the number of Italian companies applying for these contracts. To achieve this, it is crucial to invest in outreach, training, and capacity-building initiatives through government agencies such as the Ministry of Economic Development, chambers of commerce, and trade associations. Some proposals that we present in an indicative and non-binding form are:

- Fostering business networks is paramount to enhancing Italian companies' participation in World Bank projects. These networks can take the form of collaborative endeavors such as network contracts, which encourage multiple companies to collaborate on a single procurement bid. This not only reduces the risk but also combines the expertise of various firms, increasing the overall competitiveness of Italian businesses. To complement these network contracts, informative campaigns can be launched to promote their benefits and educate companies on how to establish and engage in such networks effectively. By encouraging collaborative efforts and facilitating knowledge exchange among businesses, policymakers can create an environment where Italian companies can collectively strengthen their position in World Bank procurement tenders and seize global development opportunities more effectively.
- Information sessions and workshops:¹ organize informational sessions and workshops across different regions in Italy to create awareness about World Bank projects, the application process, and the requirements for participation. These sessions can be held in collaboration with local chambers of commerce and trade associations to reach a broader audience.
- Online training courses: develop a series of online training courses that focus on various aspects of World Bank procurement, such as project bidding, financial management, and compliance with environmental and social standards. These courses can be made available to Italian companies through a dedicated online platform.
- Mentorship programs: establish mentorship programs that pair experienced companies that have successfully participated in World Bank projects with new or less-experienced firms. This initiative can facilitate knowledge transfer and help newer companies navigate the complexities of the procurement process. This can be organized and managed at the regional or provincial level in cooperation with trade associations and chambers of commerce.
- Partnerships with educational institutions: collaborate with universities, technical schools, and research institutions to incorporate courses on World Bank procurement and international development into their curricula. This will help build a pipeline of skilled professionals who are

¹ The only training activities conducted in recent years are the following two, as listed on the Ministry of Foreign Affairs' website:

The first seminar, "Tender Lab," held in 2018. [Link to Seminar](#)

The second seminar, "Tender Lab," conducted in 2023. This was a hybrid training activity, which, while commendable, may not be sufficient. [Link to Seminar](#)

knowledgeable about the procurement process and can contribute to the success of Italian companies in this arena. A similar example is the list of Innovation Managers established at the Italian Ministry of Economic Development.

- Networking of companies: SMEs can benefit from networking and collaborating with other companies. The government can facilitate the formation of consortia or clusters of companies that can work together to participate in procurement tenders, sharing resources and expertise.
- Access to finance: work with financial institutions to develop specialized loan products or guarantee schemes that can help Italian companies access the necessary financing to participate in World Bank projects. This will enable more firms to bid for contracts and increase their chances of success.

By fostering a more competitive and diverse landscape among Italian companies participating in World Bank projects, policymakers can promote a more equitable distribution of awarded contracts and maximize the benefits of international development opportunities for small and medium enterprises and for the whole Italian economy.

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Procurement of multilateral development banks: critical issues and prospects for Italian small and medium-sized enterprises' exports

Valentina Meliciani, Luca Policino, Roberto Urbani

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Procurement of multilateral development banks: critical issues and prospects for Italian small and medium-sized enterprises' exports

Valentina Meliciani, Luca Policino, Roberto Urbani

Abstract

This working paper examines Italian firms' participation in international public procurements through World Bank-funded tenders and the implications of this for their growth and competitiveness. The study investigates trends in Italian firms' engagement in World Bank procurement contracts, compares Italy's position within G7 and EU countries, and analyzes the concentration of Italian firms involved in these contracts. The findings of this study reveal that Italian firms are more concentrated in their participation in World Bank procurement contracts, which can be attributed to a variety of factors. These factors may include the size, the willingness to innovate, the industry and the geographical area. By engaging in World Bank-funded projects, Italian firms can leverage these benefits to foster growth, diversify their operations, and strengthen their overall competitiveness in the global market.

1 | INTRODUCTION

The international public procurement sector has consistently been a competitive market for Italian firms. Currently, there are approximately twenty Multilateral Development Banks (MDBs), with the World Bank (WB) being the most prominent. The World Bank stands out due to its extensive geographical reach, being the first of its kind, and serving as a model for best practices that have been adopted by other MDBs to maximize effectiveness and efficiency (Mistry, 1995).

The World Bank defines procurement as the acquisition of goods, works, or services by a procuring entity, generally using public funds. Procurement encompasses all activities related to the acquisition process, including the identification of needs, defining technical specifications, selecting appropriate procurement methods, preparing and issuing bidding documents, managing the bidding process, evaluating bids, awarding contracts, and contract management. The World Bank's procurement policies and procedures aim to promote economy, efficiency, transparency, and fairness in the procurement process while ensuring the highest ethical standards (World Bank, 2020). Winning World Bank procurement contracts holds significant potential for firms seeking to expand their business, internationalize their operations, and diversify their target market. By participating in World Bank-funded projects, firms gain access to new markets and clients in various regions across the globe, enabling them to broaden their business horizons and tap into new revenue streams. This international exposure also provides valuable experience in working with diverse cultures, regulations, and business environments, thus further enhancing the firm's global competitiveness.

Initially, these banks primarily focused on providing aid to the public sector. However, after post-conflict (WWII) reconstruction efforts concluded, they expanded their operations to include the private sector. This shift aimed at generating value for local and national communities beyond the financial aspects of profitability and return on investment (Artige & Nicolini, 2013). The updated objectives involved funding the establishment of businesses to enhance the single market's functionality and financing projects of shared interest among multiple member states (Clifton, Diaz-Fuentes & Revuelta, 2014).

Examining the World Bank's (WB) data, in the 1990s, Italian firms secured an average of 4% of total contracts. This dropped to an average of 0.5% in the first decade of the 2000s, and then increased to 1.5% through 2020 (Procurement under World Bank Financed Projects, Annual Report). The resurgence was initially driven by policymakers' awareness during the global financial crisis and later by Italian firms seeking new markets and resources. A similar trend occurred with the European Investment Bank (EIB) group, including the European Investment Fund (EIF), which primarily targets European small and medium-sized enterprises (SMEs). The EIF provided over €34 billion to SMEs through venture capital operations and guarantees, helping to mitigate the 2007-2009 financial crisis (Griffith-Jones & Tyson, 2012).

Previous research indicates that the decline in Italian firms' contract value share was mainly due to larger contracts in the civil works sector in emerging countries where Italian firms already had a strong presence (Piga, 2007). In these countries, Dollar & Levin (2005) demonstrated a link between project success and institutional quality, an external factor not always controllable by firms.

Additional factors affecting Italian firms' participation include evolving markets, difficulty entering new MDB-related sectors, and complex bidding processes. Moreover, increased multilateral financing has influenced areas like infrastructure, where Italian firms have lost market share. Infrastructure investments are particularly important in developing countries, as they drive economic growth and reduce population inequalities (Agénor & Moreno-Dodson, 2006; Straub, 2008).

World Bank procurement processes are also considered a form of public-private partnership in management science literature, as they involve collaboration between public and private sectors to efficiently deliver public services or infrastructure projects. Rossel and Saz-Carranza (2020) found that public-private partnerships (PPP) policy adoption is influenced by legal traditions, EU membership, transparency, low corruption levels, government size, and GDP per capita. Therefore, Italian firms probably need to understand EU regulations and competition rules to succeed in PPP procurement. Casady (2021) demonstrates that varying combinations of institutional factors, such as market reliability, political and social will, and regulatory regimes drive PPP market performance across countries, with PPP capacity being sufficient but not necessary, and market transparency playing a less crucial role than previously thought. Tan & Zhao (2021) emphasize that good governance, fiscal capacity, and past PPP experiences contribute to the adoption of PPP projects in China, which can be linked to the growth of Chinese firms that have successfully won an enormous number of World Bank contracts in the last decade due to their ability to meet international standards.

Moreover, securing World Bank contracts can enhance a firm's reputation and credibility, as these projects often involve stringent requirements, high quality standards, and rigorous evaluation processes. Successfully delivering on these contracts signals a firm's capability, reliability, and commitment to excellence, which may lead to increased business opportunities and strategic partnerships beyond the World Bank-funded projects.

Diversifying their target market through World Bank procurement contracts also allows firms to mitigate risks associated with economic downturns or market fluctuations in their domestic markets. By expanding their client base and geographical reach, firms can reduce their vulnerability to localized economic challenges and achieve more stable growth.

Analyzing Italian firms' participation in tenders funded by the World Bank and other MDBs is crucial for identifying their strengths in international public contracts for goods, services, consulting, and civil works. A detailed examination of contract and bidding outcomes can guide policymakers in supporting business internationalization, potentially utilizing resources from the National Recovery and Resilience Plan (NRRP) to enhance Italy's international competitiveness, which is a key objective of the Plan. The second paragraph analyzes Italian participation in World Bank procurement over the last two decades, focusing on the number of procurements and their economic value. The third paragraph compares Italy's position to those of other G7 and EU countries. The fourth paragraph compares Italy and France, which have different participation structures, and highlights the high concentration of Italian firms involved using secondary data from archival databases to explain the reasons behind this. The final section offers conclusions and insights for policymakers on promoting greater participation of firms in these growth and internationalization opportunities, while suggesting new avenues for future research.

This working paper is based on the World Bank's preliminarily reviewed data on procurement contracts. The dataset¹ reports both the number and value of procurement contracts awarded by each country from 2000 to 2019. We analyze two World Bank (WB) datasets containing information about awarded contracts subjected to review by WB authorities. The two datasets respectively cover the period from 2001 to 2016 and from 2017 to 2022. Data concerns borrower countries and procurement methods, sectors, and categories.

2 | MEASURING ITALIAN PARTICIPATION AND THE ECONOMIC VALUE PRODUCED

Figure 1 plots the evolution of the yearly values and numbers of contracts awarded to Italian firms during each of the years covered by our dataset. The total yearly value of the contracts awarded to Italian firms remained stable from 2000 to 2005, ranging from 60 to 120 million. Values started increasing in 2006, peaking in 2010 (1.1 billion) with an increase of 268% compared to the previous year (320 million). Values remained high but volatile until 2016 (148 million) when there was an 84% drop compared to 2015 (905 million). The last three years of the dataset (2016 - 2019) show values from the 2006 - 2009 period. However, we can notice increased volatility: a yearly increase of 319% in 2018 is followed by a 40% drop in 2019.

¹ <https://finances.worldbank.org/browse?category=Procurement&limitTo=datasets>

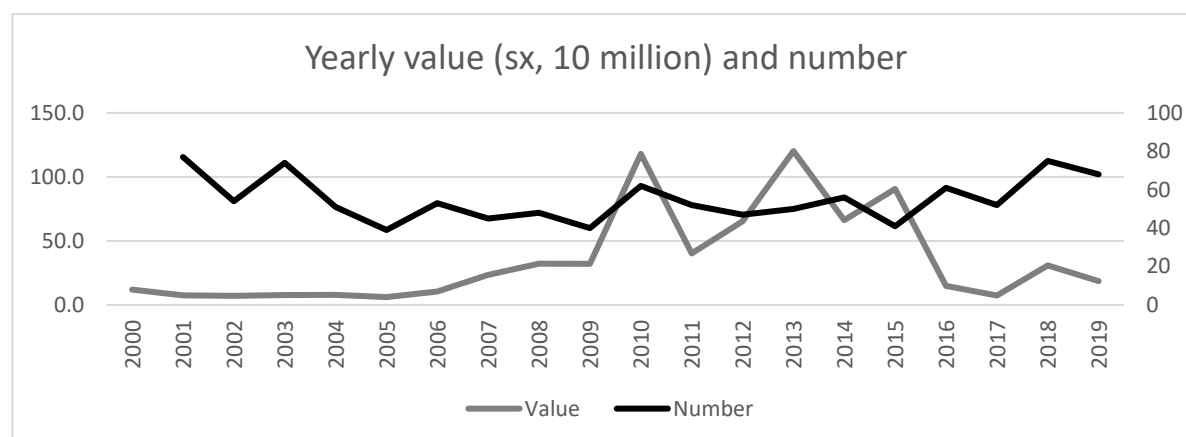


Figure 1. Yearly values and numbers of contracts awarded to Italian firms.

2.1 / Value of contracts awarded to Italian firms

The total value of contracts awarded to Italian firms during these years amounts to 7,1 billion dollars. This number is not evenly spread among the different years taken into consideration, with an average of 359 million and a coefficient of variation of 1. We can distinguish at least four periods, each characterized by a specific trend: from 2000 to 2005; from 2006 to 2009; from 2010 to 2015; and from 2016 to 2019. **Tab. 1** shows the key statistics on these periods.

Period	Average (10 million)	Standard Deviation	Coefficient of Variation
2000-05	8,01	1,83	0,23
2006-09	24,51	8,89	0,36
2010-15	83,40	29,09	0,35
2016-19	17,89	8,47	0,47

Table 1. Key statistics on value of contracts awarded to Italian firms

The first period (2000-05) is characterized by low volatility, but an overall halving of the yearly value of the awarded contracts. Values ranged from a maximum of 119 million (2000) to a minimum of 60 million (2005), the average was 80 million and the coefficient of variation only 0.23. During the second period, from 2006 to 2009, values started to significantly increase each year: +71% in 2006, +125% in 2007, +38% in 2008. Growth temporarily stopped in 2009 but peaked in 2010 (1,179 billion) with an increase of 268% compared to the previous year (320 million). From 2010 to 2015, values were relatively high, with an average of 834 million, and volatile, with a coefficient of variation of 0.35. The last three years of the dataset (2016 - 2019) showed some kind of **reversion to the mean** dynamic. In 2016 (148 million) there was an 84% drop compared to 2015 (905 million). The 2016-2019 average is 178 million, much lower than that of the 2010-2015 period. These numbers are closer to the 2006 - 2009 period, but with yearly decreases instead of increases such as -84% in 2016; -51% in 2017. In 2018 (307 million) there was a yearly increase of 319%, but it was followed by a 40% drop in 2019 (185 million). This high volatility is

illustrated by the coefficient of variation of this period (0.47) being higher than that of all the other periods mentioned before.

2.2 | *Number of contracts awarded to Italian firms*

The total number of contracts awarded to Italian firms during the years covered by our dataset is 1045. This time-series shows less variability than the one just analyzed: the coefficient of variation is only 0.21, while the average yearly number of contracts awarded is 55. Also in this case, we chose to divide our data into sub-periods each characterized by a specific trend: 2001-2005; 2006-2015; 2016– 2019. **Tab. 2** shows the key statistics on these years.

Period	Average	Standard Deviation	Coefficient of Variation
2001-2005	59,00	14,41	0,24
2006-2015	49,40	6,39	0,13
2016-2019	64,00	8,51	0,13

Table 2. Key statistics on number of contracts awarded to Italian firms

The average of the first period is 64 projects every year, but the yearly growth is almost always negative: -30% in 2002, -31% in 2004, -24% in 2005. Thus, the period is characterized by a decline in the annual number of projects awarded to Italian firms: from 77 projects (2001) to 39 (2004). This decrease is particularly intense since this is also the period with the highest coefficient of variation. In 2006, a rebound of +36% interrupted the decline: the yearly number of projects increased from 39 to 53. The following years, until 2015, present a stagnating yearly number of projects awarded: fluctuating between a minimum of 40 (2009) awarded projects and a maximum of 62 (2010), with an average of 49. Except for 2010 and 2015, no yearly increase or decrease is higher than 20% in absolute value. The standard deviation (6,39) is the lowest of the three subperiods, further highlighting the stagnant dynamic of these years. The number of projects started increasing significantly in 2016, starting another **reverse to the mean** dynamic. The annual increases in 2016 (+49%) and 2018 (+44%) are significantly higher than the small decreases of 2017 (-15%) and 2019 (-09). At the end of the period (2019) the number of projects is 68, showing a return to values comparable to those at the beginning of our dataset. On the one hand, the average number of projects in this period is 64, higher than those of the first declining period (59). On the other hand, the increase has been less sharp than the initial decrease, as illustrated by a lower coefficient of variation (0,13 compared to 0,24).

2.2 | *Preliminary observations*

To better grasp the evolution of the two time-series just described, figure 2 shows the annual percentage deviation from the 2000-2019 means of both the number and the value of projects awarded.

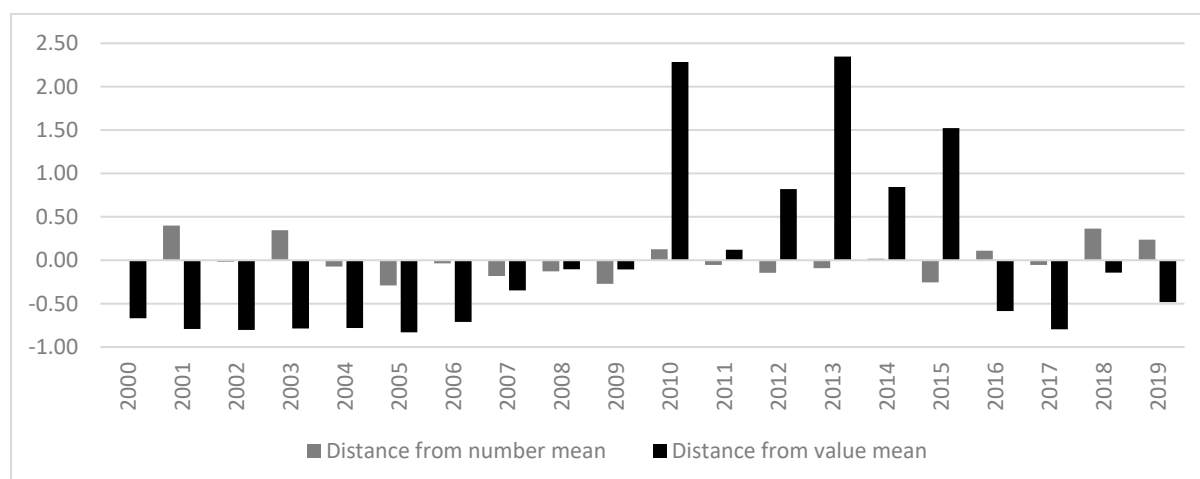


Figure 2. Annual percentage deviation from the 2000-2019

The analysis of the annual value and number of projects awarded to Italian firms presented so far leads to some preliminary observations. For the first years of our dataset, Italian firms have won a decreasing number of contracts, but of an increasing value. After the Global Financial Crisis, Italian firms won contracts of significantly higher value compared to the past, despite the number of contracts diminishing and stagnating from 2006 to 2015. Lastly, while the annual value of contracts awarded decreased, becoming similar to those of the beginning of the century, their number increased. Overall, it looks like the two time-series are negatively correlated. It looks like Italian firms have been able to either win relatively less contracts of higher value (in the middle of our dataset) or relatively more contracts of lower value (at the beginning and at the end of our dataset). Before reaching any conclusion, and formulating policy advises, we need to understand which of the dynamics highlighted is characteristic of Italian firms. In the next section, we compare Italian data with those of other advanced economies.

2.3 | Borrower countries, procurement method and sector

Throughout the temporal scope of our datasets, Italian firms secured contracts for projects spanning various developing nations on multiple continents, including Latin America, Africa, and Asia. Upon scrutinizing the data, no discernible regional predilection emerges, suggesting a fairly uniform distribution of contract awards worldwide (refer to FIG. 3). Nevertheless, an examination of specific countries highlights those where Italian firms demonstrated exceptional prowess in securing contracts during this period. Notably, Albania stands at the forefront with a remarkable tally of 70 contracts, followed closely by Egypt with 64 contracts and Ethiopia with 49.

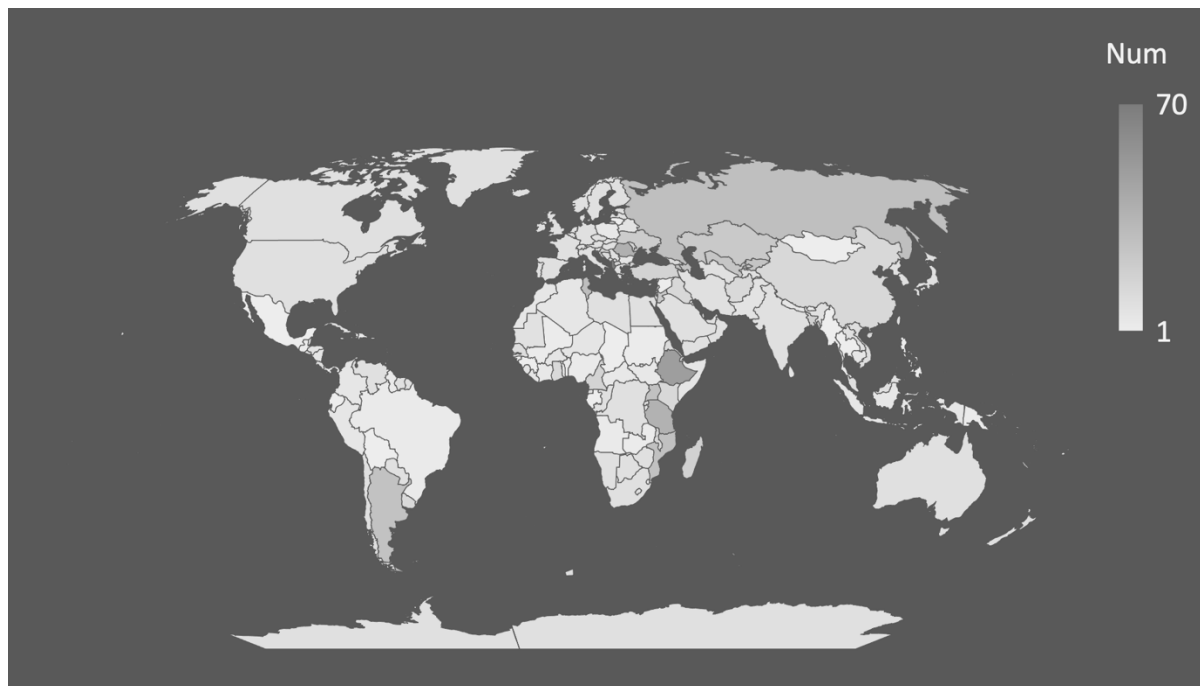


Figure 3. Borrower countries (2001-2022)

FIG. 4 provides a comprehensive list of the top 10 countries in this regard. Noteworthy is the observation that the volume of contracts secured by Italian firms in these nations approximates the mean number awarded to G7 counterparts and significantly surpasses the corresponding figures for EU firms, except in the case of the Democratic Republic of Congo (D.R. of Congo).

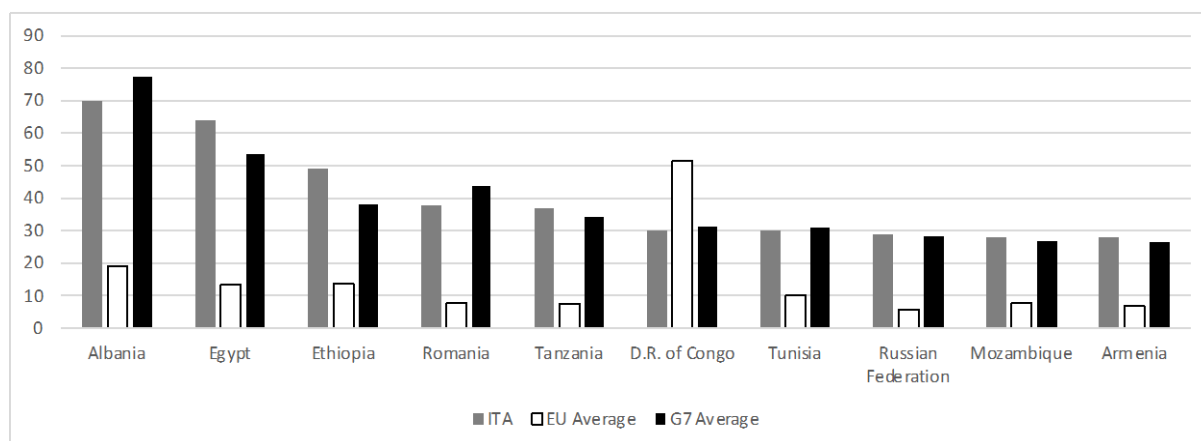


Figure 4. Number of contracts won in top 10 Italian borrower countries (2001 - 2022)

The predominant procurement method for the contracts awarded can be divided into two primary categories: international competitive bidding, encompassing 469 contracts, and quality and cost-based selection, comprising 359 contracts. Collectively, these two modes of procurement lay claim to over half of the contracts, constituting 36% and 28% of the total, respectively (as illustrated in FIG. 3). Notably, no other procurement category breaches the 5% threshold, although the request for the bids category

commands 8% (equivalent to 108 contracts), and direct selection holds 6% (equivalent to 84 contracts) (FIG. 5).

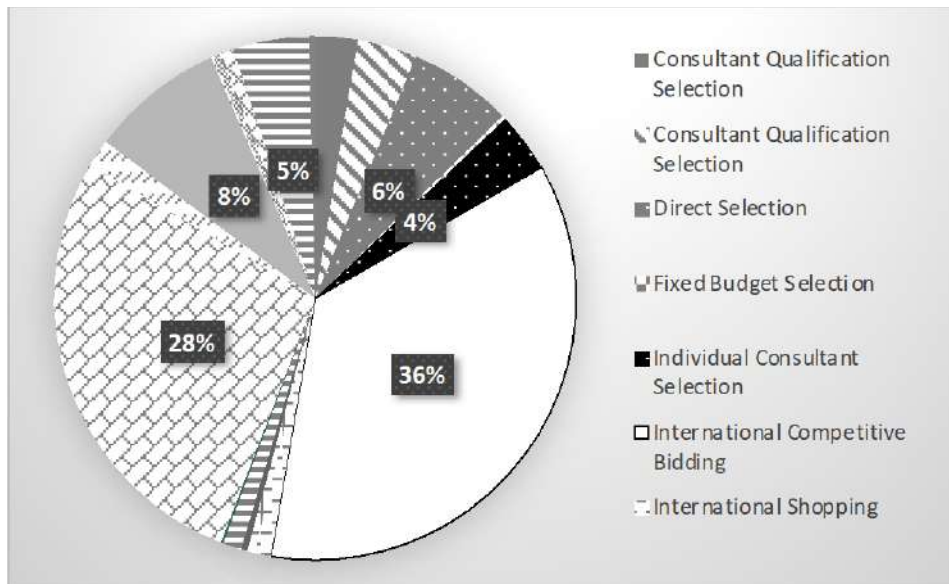


Figure 5. Procurement method of awarded contracts (2001-2022)

When juxtaposed with the aggregated data from EU and G7 countries, Italy exhibits distinct trends. A notable share of Italian contracts, exceeding 30%, is awarded through international competitive bidding, and more than 10% are conferred via the request for bid mechanism (FIG. 6).

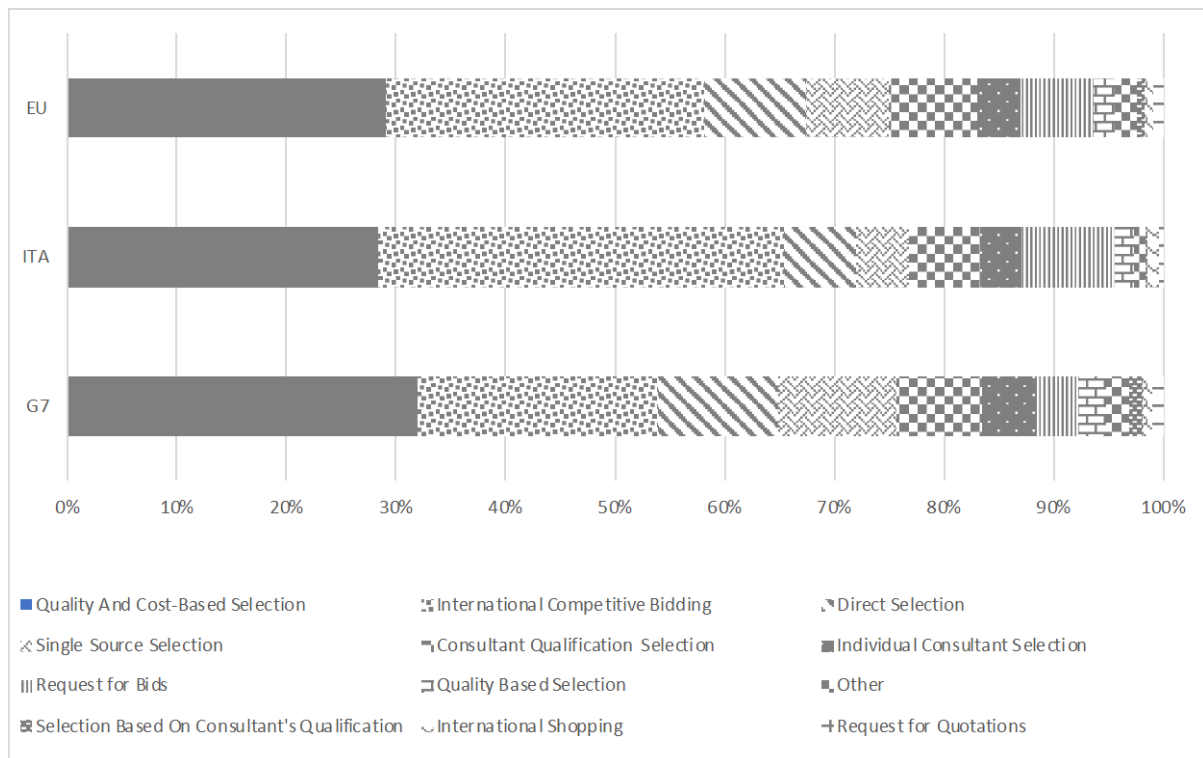


Figure 6. Procurement method of awarded contracts (2001 - 2022)

The contracts awarded to Italian firms span across ten distinct sectors, with aggregated data revealing that nearly a quarter of them, totaling 616 contracts, fall under the public administration sector. Following closely are the transportation and water, sanitation, and waste management sectors, constituting 15% (379 contracts) and 12% (294 contracts) of the overall count, respectively. The remaining categories each contribute between 5% and 9% of the total, reflecting a well-distributed allocation of contracts across sectors. However, there are two notable exceptions: the financial and ICT sectors, each comprising only 2% of the total (FIG. 7).

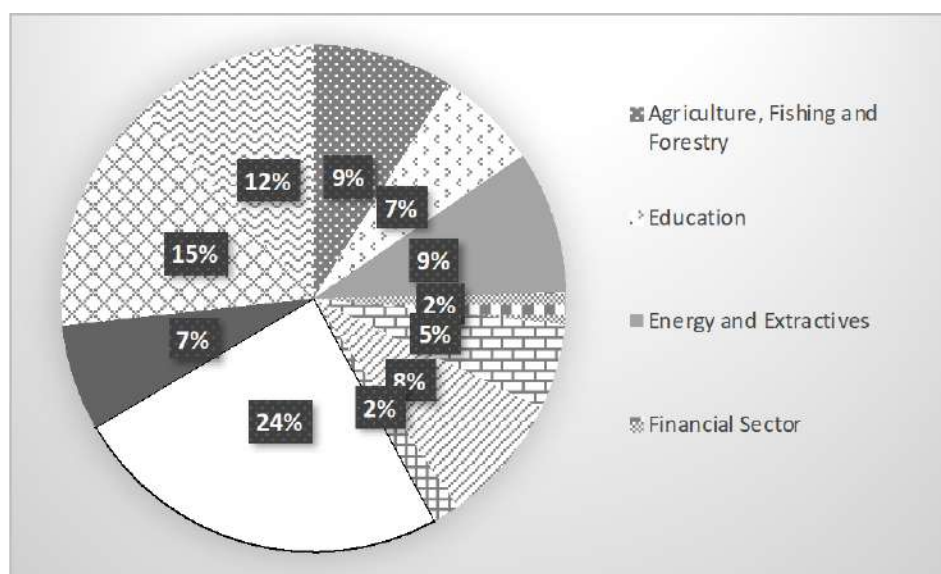


Figure 7. Major sector of contracts awarded to Italian firms (2001-2022)

Analyzing the historical evolution of these sectoral distributions reveals a relatively stable pattern until 2015. In 2016, a significant shift occurs, marked by a rapid decline in the public administration sector's significance. Up until 2015, this sector averaged 18.26 contracts per year. However, post-2016, this figure consistently falls below 5 contracts per year. This decline is partially counterbalanced by a surge in the transportation sector, which has held the largest share of contracts since 2017. Additionally, contracts in the energy and extractives, as well as finance sectors, experience a gradual increase during this period. Their post-2016 averages approximately double their pre-2016 figures, rising from 8.3 to 16.3 contracts per year for the former and from 1.6 to 3.6 contracts per year for the latter. Meanwhile, contracts in the education and agriculture, fishing, and forestry sectors consistently hover around 10% of the total throughout the observed years. Notably, the ICT sector, almost nonexistent before 2016, starts to gain traction, peaking at 22 contracts in 2019 and 17 contracts in 2022, constituting nearly 10% of the total contracts for those respective years (FIG. 8).

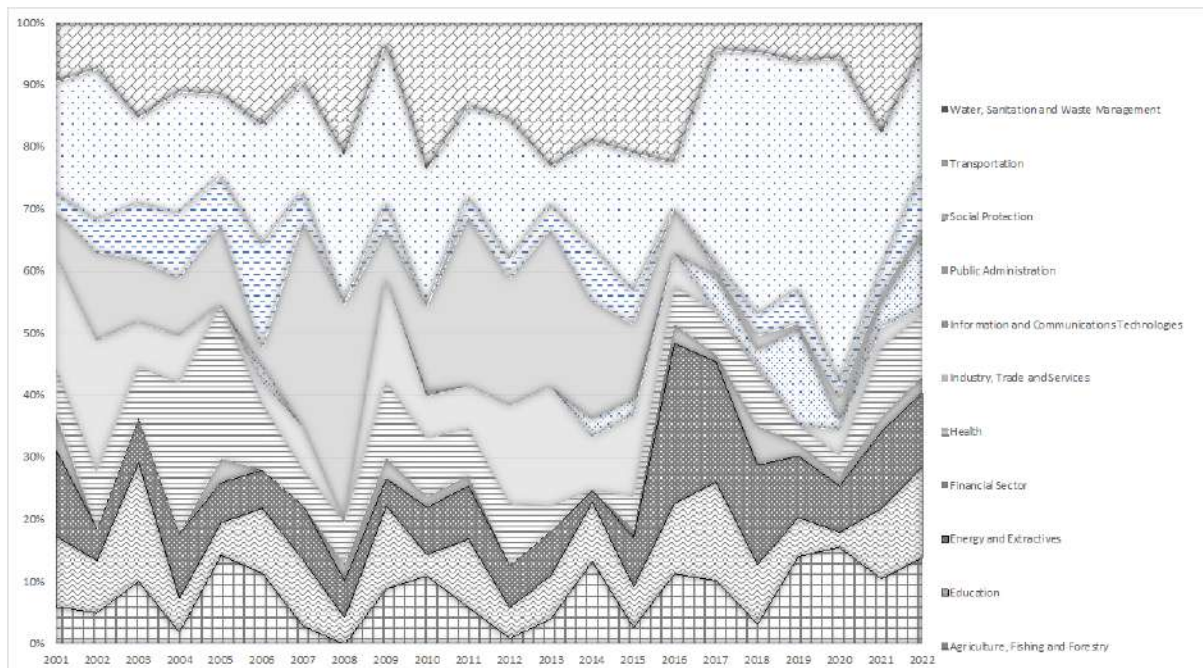


Figure 8. Major sector of contracts awarded to Italian firms by year

3 | COMPARATIVE ANALYSIS OF G7 AND EU COUNTRIES

We compare Italian firms’ data with those of their peers from the G7 countries: the United States, the United Kingdom, Germany, Japan, Canada, France. Figure 9 plots the yearly values and numbers of contracts awarded to Italian and G7 firms. G7 data are averages.

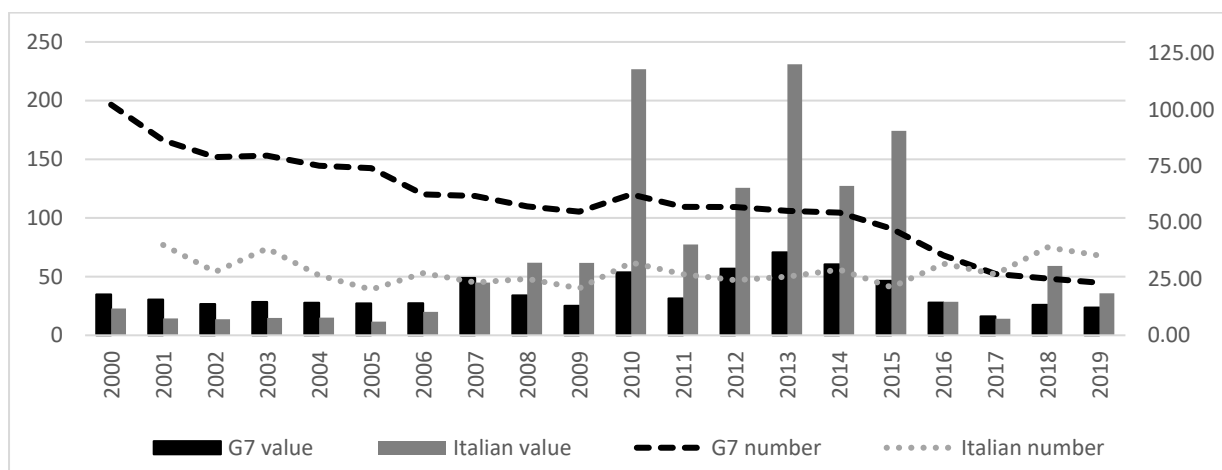


Figure 9. Yearly values and numbers of contracts awarded to Italian and G7 firms

3.1 | Value of projects awarded

To facilitate the comparison, tab. 3 points to the key statistics on the values of contracts won by G7 firms, divided according to the sub-periods described before.

Period	Average (10 million)	Standard Deviation	Coefficient of variation
2000-05	15,18	7,47	0,49
2006-09	17,61	13,78	0,78
2010-15	27,70	28,76	1,04
2016-19	12,16	10,91	0,90

Table 3. Key statistics on the values of contracts won by G7 firms.

Looking at the first subperiod (2000-2005), G7 firms won contracts having an average annual value that is almost double those won by Italian firms during the same period: 151 million for G7 firms, and 80 million for Italian ones. There is a clear underperformance of Italian firms that is worth investigating. Italian firms start to perform relatively better after 2006: the difference with the G7 average is still negative (-27%), but the gap is quickly closed: in 2009 Italian values are already 145% higher than the G7 average. The average annual value of this period (2006-2009) is 240 million, which is significantly higher than the G7 (176 million). As mentioned before, the period from 2010 to 2015 is the one where the annual values of Italian contracts are the highest in our dataset. The years 2010-2015 were exceptionally positive not only compared to the Italian firms' historical trend, but also compared to the other G7 countries. In 2010, Italian values are 323% higher than the G7 average, and they are always at least double than that until 2015. While in 2006 the total yearly value of the projects awarded to Italian firms accounted for only 10% of those won by all the G7 firms, they accounted for more than 50% in 2010 and 2015. Figure 10 shows the same pattern comparing Italian values with those of the main EU countries: France, Germany, and Spain. There is an initial underperformance from 2000 to 2005, followed by a strong outperformance from 2010 to 2015. Finally, there is no clear leader from 2015 to 2019. We can also see some similarities with the Spanish data that might be worth investigating in future research.

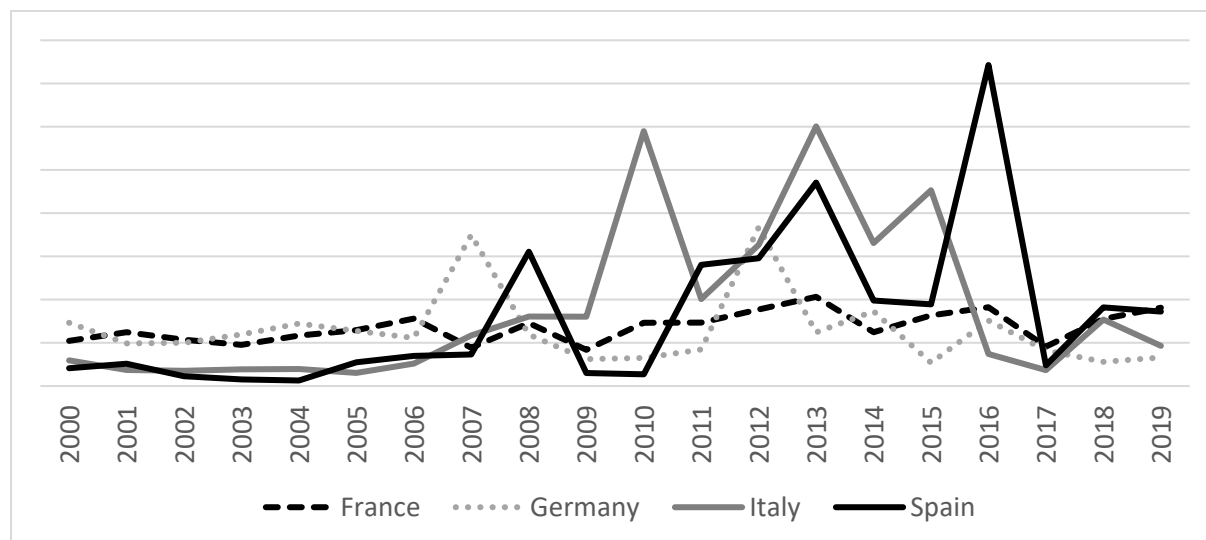


Figure 10. Yearly values and numbers of contracts awarded to the main EU countries

3.2 | Number of projects awarded

To facilitate the comparison, table 4 points to the key statistics on the number of contracts won by G7 firms, divided according to the sub-periods described before.

Period	Average	Standard deviation	Coefficient of variance
2001-2004	153,91	76,07	0,49
2005-2015	112,45	62,71	0,56
2016-2019	53,40	27,00	0,51

Table 4. Key statistics on the number of contracts won by G7 firms

There are important differences between G7 and Italian data. Looking at the first period (2001-2004), the average annual number of contracts awarded to G7 firms is almost triple that of Italian ones, while the coefficient of variance is the double (0,49 vs 0,24). During the second period, Italian firms start catching up: the averages decrease for both G7 and Italian countries, but the annual average number of awarded contracts to the former (112) is still double those of the latter (49). Moreover, G7 numbers are less stagnating than Italian ones: the coefficient of variance of the former is increased compared to the first period (0,56 for G7 vs only 0,13 for Italy). Surprisingly, during the last period (2016-2019) Italian firms finally catch up with G7 numbers and surpass them. The G7 average for the period is 53, while the Italian one is 64. Figure 11 shows that the outlook is improving for Italian firms: from accounting for the 5% of contracts awarded to G7 firms until 2017, to more than 20% in 2019.

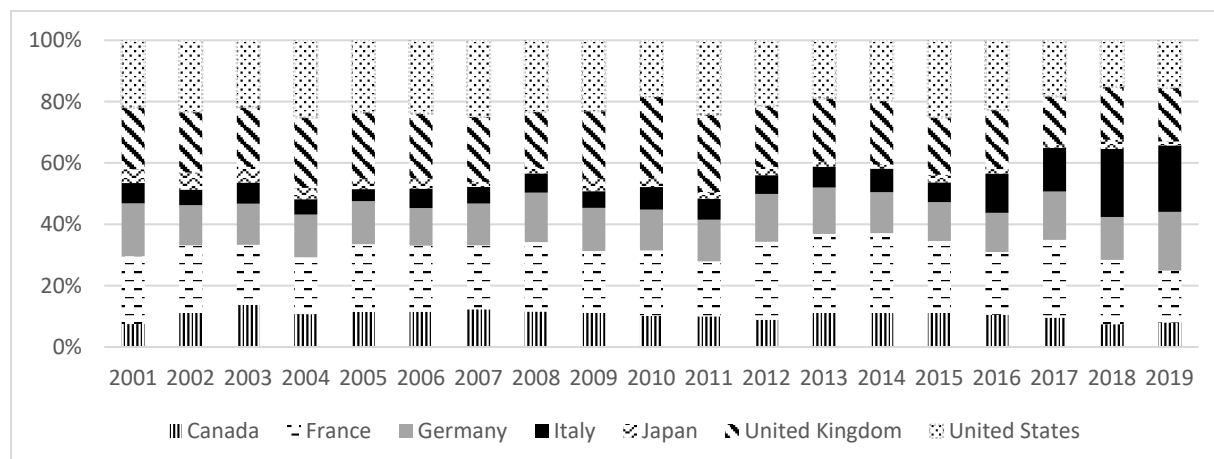


Figure 11. Annual number of contracts awarded to G7 firms

3.3 / Observations

Concerning the annual value of awarded projects, the comparative analysis with G7 peers, and the particular focus on the EU ones, confirm the findings of the trends highlighted during the analysis of the Italian data. Italian firms performed relatively poorly until 2006, when the annual value of their contracts started increasing sharply, outperforming G7 and EU peers. The best performance happened during the years 2010-2015, when Italian values were exceptionally high compared both to their historical trend and the peers from other advanced economies. It is worth investigating the reasons behind these trends.

Concerning the yearly number of contracts, Italian firms eventually caught up and surpassed the G7 averages. However, the data shows that this is not due to an exceptional performance of Italian firms compared to its historical trend. Italian values became similar to the first period; the outperformance is due to a sharp decrease of the G7 averages during all the period considered. This highlights a resilience of Italian firms. Their stagnating values until 2015 and slow increase since then stand in sharp contrast to the G7's constantly decreasing performance. Thus, from the point of view of numbers, this analysis highlights the positive performance of Italian firms compared to their G7 peers.

4 | DYNAMICS OF WORLD BANK CONTRACT AWARDS: A COMPARATIVE ANALYSIS OF ITALIAN AND FRENCH FIRMS IN THE EUROPEAN UNION

In the competitive landscape of international procurement, understanding the dynamics and characteristics of nations and firms winning contracts is essential for fostering economic growth and global collaboration. This section aims to provide a comprehensive analysis of the World Bank contract awards to Italian and French firms from 2001 to 2022. By examining the number of contracts won, the

total value of contracts awarded, and the market concentration, we will uncover the underlying trends and strategies of firms from these two European Union countries.

The analysis will be divided into several sections, beginning with a macro-level evaluation of contracts won by firms from each nation, followed by a micro-level examination of individual contracting firms. The study will focus on the similarities and differences between the two nations in terms of procurement structure, persistence in winning contracts, and market concentration. By utilizing various indices and metrics, such as the Herfindahl-Hirschman Index (HHI), Entropy Index, and the C4 index, we will provide a comprehensive understanding of the procurement landscape for both countries.

4.1 | Macro-Level Evaluation: National Trends and Rankings in World Bank Contract Awards

Evaluating the number of contracts awarded to firms from each nation within the dataset results in a ranking based on the total number of contracts awarded and one based on the total value in U.S. dollars. Interestingly, Italy ranks 51st in terms of the number of contracts won but ranks in the top ten (4th position) in terms of the value of contracts obtained.

Focusing the analysis on four European Union countries (Italy, France, Germany and Spain) shows (figure 12) that Italy and Spain have the same structure, i.e., a low number of contracts won but a high economic value. In contrast, France and Germany follow the opposite trend, with more than double the number of contracts won but a slightly lower total economic value. The sum of contracts awarded to Spain and Italy does not reach the total of those awarded to Germany and is less than half that of France.

Analyzing the two distributions in more detail, the number of contracts won in the twenty years studied is almost always the same. It changes in some years for Italy and Spain, which alternate outperforming each other a few times from 2011 onward.

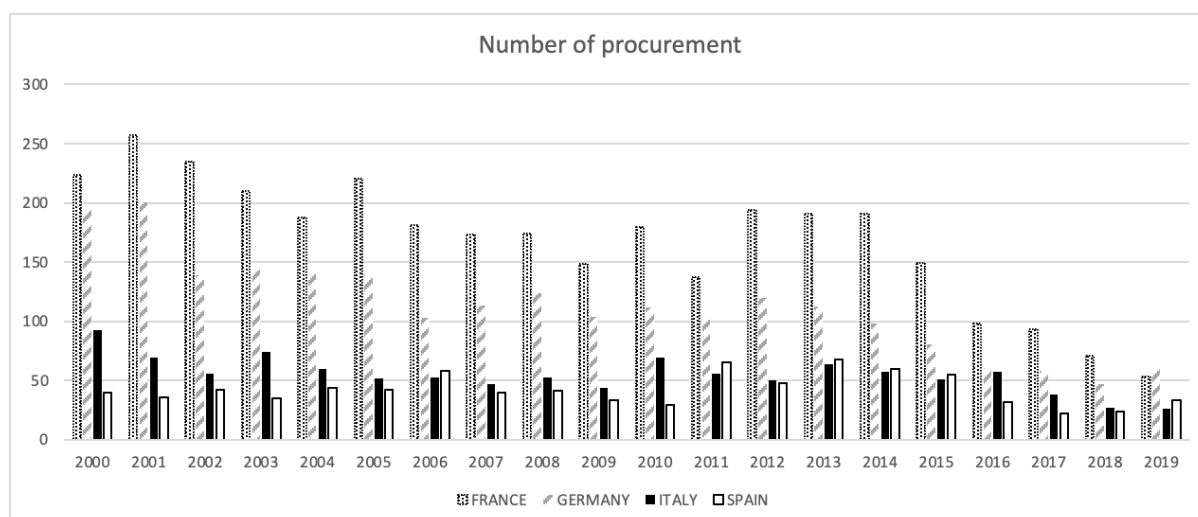


Figure 12. Comparing the numbers of contracts awarded by the first four EU countries

On the contrary, the trend in value (figure 13) is very different; in fact, for Italy and Spain, the most important growth, which significantly increases the average value, occurs after 2011, precisely in the years that make the economic value of contracts awarded increase exponentially.

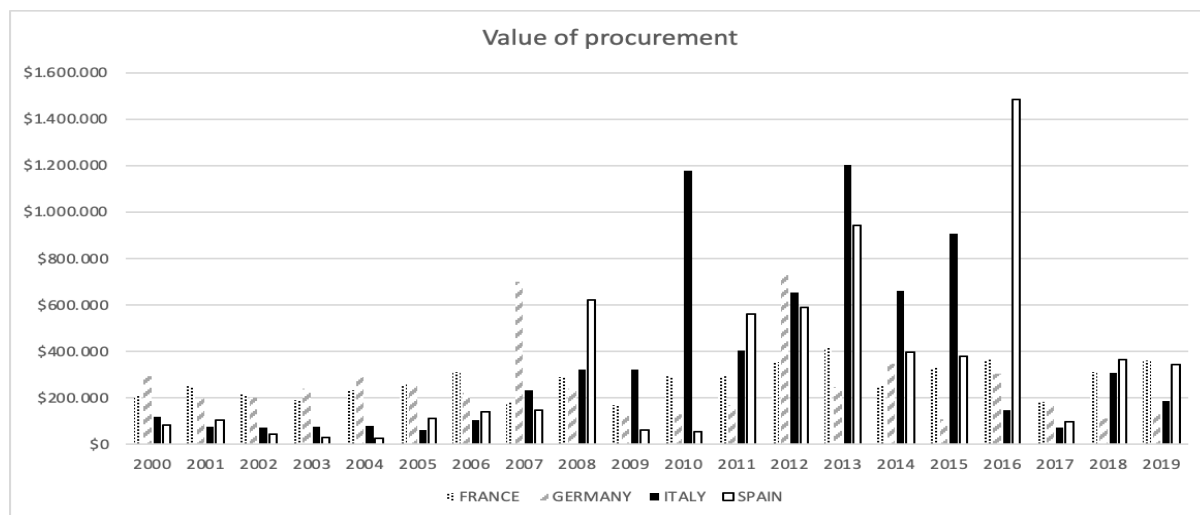


Figure 13. Comparing the values of contracts awarded by the first four EU countries

Continuing the more detailed analysis of contracting firms with a comparison between Italy and France (table 5), the stark difference in the number of suppliers awarded contracts between the two nations is evident. In fact, Italian organizations for the same period (2001-2022) turn out to be only 30 percent of the total number of French organizations.

Moreover, Italian firms secure only 1/3 of the total number of contracts awarded to their French counterparts. This striking difference highlights the challenges faced by Italian firms in participating in World Bank contracts, with an average of only 26 contracts per year throughout the 20-year analysis period. However, when comparing the average number of contracts per firm, the results are more aligned. Firms from both countries manage to secure an average of approximately 2.5 contracts. This suggests that the lower number of contracts won by Italian firms is due to a lower number of firms which succeed in procurement tenders. The final metric evaluated in this analysis is the total contract value. Interestingly, despite the significant disparity in the number of contracts obtained by Italian firms, the overall dollar value of their contracts remains about 20 percent higher than that of French firms.

	FRANCE	ITALY
SUPPLIER	1597	537
TOT PROCUREMENT	4061	1316
AVG PROCUREMENT	2,54	2,45
VALUE	\$ 6.117.978.848,83	\$ 7.356.635.941,96

Table 5. Comparison between Italy and France

Upon examining the firms based on the number of contracts awarded and comparing the top ten firms in each of the two nations, it becomes evident that French firms secure a substantially higher number of contracts than their Italian counterparts.

When examining persistence, which refers to the consistency with which firms win contracts over a 21-year period, it is expected that a firm capable of winning numerous tenders would maintain this success over time, securing at least one contract per year. French firms, particularly those at the top of the rankings, demonstrate high persistence with a value of 20 out of 21 years, while Italian firms exhibit lower persistence, with a value of 15 out of 21 continuous years. This shows that French firms may have developed skills that allow them to consistently win contracts or the fact that they participate in many more tenders in total also increases the award rate, which is three times higher than in Italy. Conversely, Italian firms display lower persistence but still maintain a respectable level, seemingly adopting a quality-focused strategy in which they participate in fewer contracts but manage to win all of them.

The final descriptive statistic highlights the maximum number of contracts secured by a single firm in one year. A French firm managed to win as many as 19 contracts within a single year, while the maximum number for Italian firms was 11.

These descriptive statistics suggest that the Italian market is characterized by a high concentration of a selected few firms that dominate in terms of both the number and value of contracts won. To explore this hypothesis further, we conducted several concentration analyses.

The initial indicator employed in our analysis is the Herfindahl-Hirschman Index (HHI), which measures market or economic sector concentration by calculating the sum of the squared market shares of individual company which secured a procurement. An HHI value of 1 represents high level of concentration, while a value of 0 represents low level. It was calculated by measuring the market share, which tells us the percentage of the value of all contracts awarded to a firm, out of the total value of contracts that year. We then calculated the square of the market share for each individual firm and added up all the squares to obtain the HHI. As depicted in figure 14 Italy exhibits a higher concentration level compared to France.

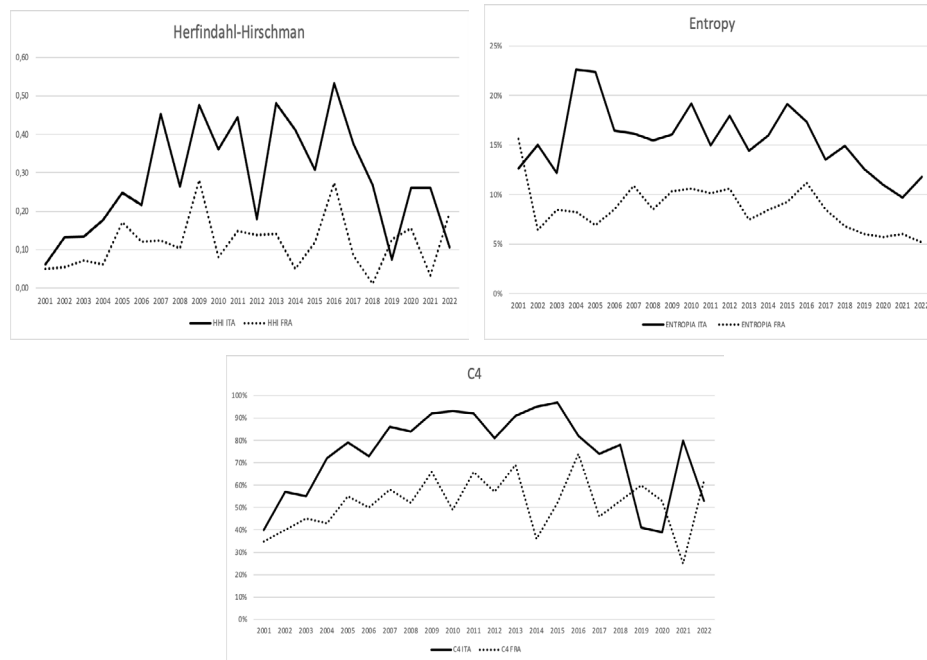


Figure 14. Concentration indices for France and Italy (2001-2022)

Our second approach utilizes the entropy index. Entropy is a measure used to quantify the level of diversity or variety within a distribution of categories. In the context of the presented data, entropy is calculated based on the frequency of appearance of different firms. It involves assessing the normalized probability of each firm's appearance and combining it with the logarithm of that probability. This resultant entropy value indicates the contribution of each firm to the overall diversity. A higher entropy value suggests a more diverse distribution, while a lower value indicates a more concentrated distribution. In our data, the entropy values for both Italian and French firms across the years show interesting trends. In the case of Italian firms, the entropy values fluctuate, ranging from 10% to 23%, with a notable peak in 2004. This suggests varying levels of diversity in firm appearances within the dataset over time. On the other hand, French firms exhibit a comparatively more stable pattern, with entropy values ranging from 5% to 16%. Both Italian and French firms seem to have experienced increased diversity in their appearances around the mid-2010s, as indicated by the higher entropy values during those years.

Lastly, we employ the C4 index to measure the concentration of values in a distribution. In several years, such as 2004, 2005, 2007, 2008, 2009, 2010, 2013, 2014, 2015, 2020, and 2021, Italy's C4 index appears to be relatively high. This indicates that, in these years, there was a high concentration of values within the distribution, with a small number of values representing a large portion of the total data. In contrast, France's C4 index fluctuates over time but generally remains lower than Italy's. This implies that the value distribution for procurement in France is less concentrated compared to Italy.

In conclusion, the analysis of World Bank contracts awarded to firms from Italy, France, Germany, and Spain reveals significant differences in their performance. While Italian and Spanish firms secure a lower number of contracts but with a high economic value, French and German firms follow the opposite trend, winning more contracts with a slightly lower total economic value. The Italian market is characterized by a high concentration of a few firms dominating both the number and value of contracts won. This concentration is supported by the Herfindahl-Hirschman Index and C4 index, which indicate that Italy's market is more concentrated than France's. Overall, these findings suggest that Italian firms may need to explore strategies to increase their participation and success in World Bank contracts, while also addressing the high concentration of a selected few dominating firms within the market. The next section addresses this issue by analyzing the characteristics of firms that are awarded contracts.

4.2 | Micro-Level Examination: Firm-Level Analysis and Market Concentration Dynamics

We compared the Italian and French firm datasets to uncover variations in key variables, including Employees, Sales, Publications, Intangibles/Turnover, and Return on Capital Employed (ROCE). The statistical analysis employed a two-sample t-test with a two-tailed distribution, considering unequal variance heteroscedasticity assumptions. The resulting p-values for the examined variables were as follows: Employees ($p = 0.007$), Sales ($p = 0.099$), Publications ($p = 0.069$), Intensity (Intangibles/Turnover) ($p = 0.060$), ROCE ($p = 0.017$), Turnover ($p = 0,059$) and Intangibles ($p = 0,040$). These p-values represent the likelihood of observing the obtained sample results or more extreme outcomes under the assumption of no substantial disparities between the Italian and French datasets. Proper consideration of the chosen significance level (α) is crucial when interpreting the findings. The analysis suggests compelling evidence of significant differences in the variables of Employees, Turnover, Intangibles and ROCE, whereas no statistically significant disparities were detected in the variables of Sales, Publications, and Intangibles/Turnover.

The results are presented in table 6 together with the descriptive statistics of several variables for Italian and French firms that have won a World Bank procurement in the last two decades. Overall, there are some similarities and differences in the characteristics of these firms from the two countries.

	ITA	FRA	ITA	FRA	ITA	FRA	ITA	FRA	ITA	FRA
	Employees		Sales		Publications		Intangible Intensity		ROCE	
Mean	1158	225	326	44,4	0,2	0,5	0,2	0,5	8	30
T-Test	0,007***		0,099*		0,069*		0,060*		0,017*	
Median	34	95	9,9	9,7	0	0	0	0	8	14
Standard Dev	6762	345	1565,6	85,1	0,3	0,4	0,3	0,4	37	128
Min	1	1	0	4	0	0	0	0	-286	-137
Max	81365	2132	15692,8	507,4	0,81	1,53	0,81	1,53	137	15

Table 6. Key statistics on selected variables of Italian and French firms

Note: sales values are expressed in million USD.

In terms of the number of employees, the mean for Italian firms is higher than that for French firms. This suggests that Italian firms may be larger than French firms. However, the standard deviation for both countries is relatively high, indicating a wide variation in the size of the firms. Regarding sales, the mean and median for Italian firms are higher than those for French firms. This indicates that Italian firms may have a higher revenue generation capability than French firms. However, the standard deviation for French firms is much larger than that for Italian firms, suggesting that there is a wider variation in the sales of French firms.

In terms of the number of publications (obtained from Bureau Van Dijk's database Orbis Patent), the mean for Italian firms is higher than that for French firms. This may suggest that Italian firms are more active in publishing research or promoting their brand through marketing efforts. However, the standard deviation for both countries is relatively high, indicating that there is a wide variation in the number of publications across firms.

Concerning intangible assets, the mean and median for Italian firms are much higher than those for French firms. This suggests that Italian firms may have a higher investment in intangible assets, such as intellectual property, brand recognition, or customer relationships, than French firms. The standard deviation for French firms is again much larger than that for Italian firms, indicating a wide variation in the level of investment in intangible assets. Regarding ROCE (Return on Capital Employed), the mean for Italian firms is lower than that for French firms. This indicates that Italian firms may have a lower efficiency in generating profits from their capital investments compared to French firms. The standard deviation for both countries is relatively high, indicating a wide variation in the ROCE across firms.

In conclusion, the results suggest that Italian firms may be larger in size, generate higher sales and have a higher investment in intangible assets than their French counterparts. However, French firms exhibit a wider variation in these variables, which may reflect a more diverse business landscape. Meanwhile, French firms seem to have a higher efficiency in generating profits from their capital investments than Italian firms. Looking at the geographical distribution and industries, the results indicate the concentration of industries in different NUTS2 regions, as measured by the Herfindahl-Hirschman Index (HHI).

HHI	NUTS2	Industry
ITA	0,14	0,25
FRA	0,30	0,22

Table 7. Concentration of industries in NUTS2 regions: a comparison between Italy and France

The results show that the industry concentration in NUTS2 regions in the study is relatively low, with HHI values of 0.14 and 0.25, respectively. This suggests that there is a relatively diverse mix of industries across the regions, rather than a few dominant industries.

When we analyze the distribution of firms considering NACE code (figure 15) the results give us some insights. Among French firms, the predominant sectors include "M - Professional, scientific and technical activities," "G - Wholesale and retail trade," and "C - Manufacturing," which collectively make up a substantial portion of the contracts won. This indicates a strong presence of expertise in consulting, commerce, and manufacturing, showcasing their significant contributions to international development initiatives. Additionally, the noteworthy representation in sectors like "J - Information and communication" and "F - Construction" underscores the diverse skills and capabilities of French firms.

On the other hand, Italian firms have shown a concentrated strength in "C - Manufacturing," with 113 firms engaged in this sector. This highlights Italy's robust manufacturing capabilities and its pivotal role in contributing to development projects. The significant presence of Italian firms in the "M - Professional, scientific and technical activities" category further emphasizes their expertise in specialized services, while their involvement in "G - Wholesale and retail trade" and "F - Construction" sectors signifies a broad skill set.

Overall, the distribution patterns reveal the unique strengths and contributions of both French and Italian firms to the international development projects supported by the World Bank. These strengths are reflective of the diverse expertise and capabilities that these countries bring to the table, ensuring a well-rounded and comprehensive approach to global development initiatives.

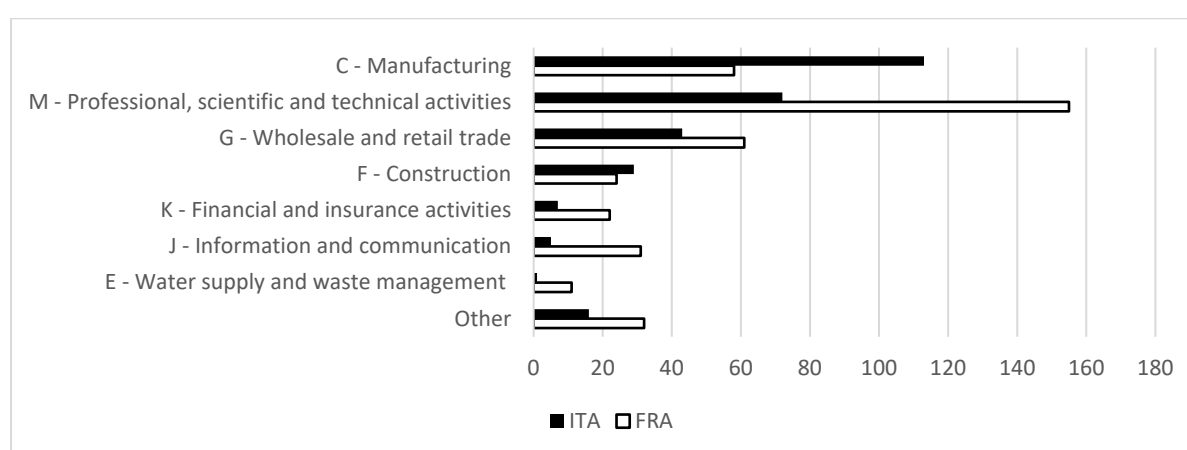


Figure 15. Italian and French winning firms' distribution across NACE Rev. 2 main sections

Finally, we analyze the geographic distribution of firms (figure 16). The data reveals a significant disparity in the magnitude of participation between the two countries. Italy's representation is predominantly concentrated in several regions, with "Lombardy" leading with 83 firms, followed by

"Veneto" with 40 and "Lazio" with 39. This indicates a more centralized distribution, potentially reflecting the strong economic and industrial presence in these regions. In contrast, the French firms' distribution spans a broader range of regions, with "Île-de-France" standing out remarkably with 200 firms. This underscores the pivotal role of the capital region, Paris, in housing a substantial number of firms engaged in international development projects. Other regions like "Auvergne-Rhône-Alpes," "Occitanie," and "Provence-Alpes-Côte d'Azur" contribute significantly as well, showcasing France's diverse economic landscape. The absence of representation in "Corse" among the French regions could be due to various factors, including the nature of projects, economic activity, or the specific focus of the region. Similarly, Valle D'Aosta has no presence, suggesting potential opportunities for increased engagement in international development initiatives.

The contrast in geographic distribution highlights the differing strategies and strengths of the two countries in approaching international development projects. Italy's concentration in select regions speaks to its specialization in certain sectors, while France's widespread presence across various regions emphasizes its diverse capabilities and contributions. These findings underline the need for strategic collaboration and knowledge sharing between regions to optimize their collective impact on global development endeavors.

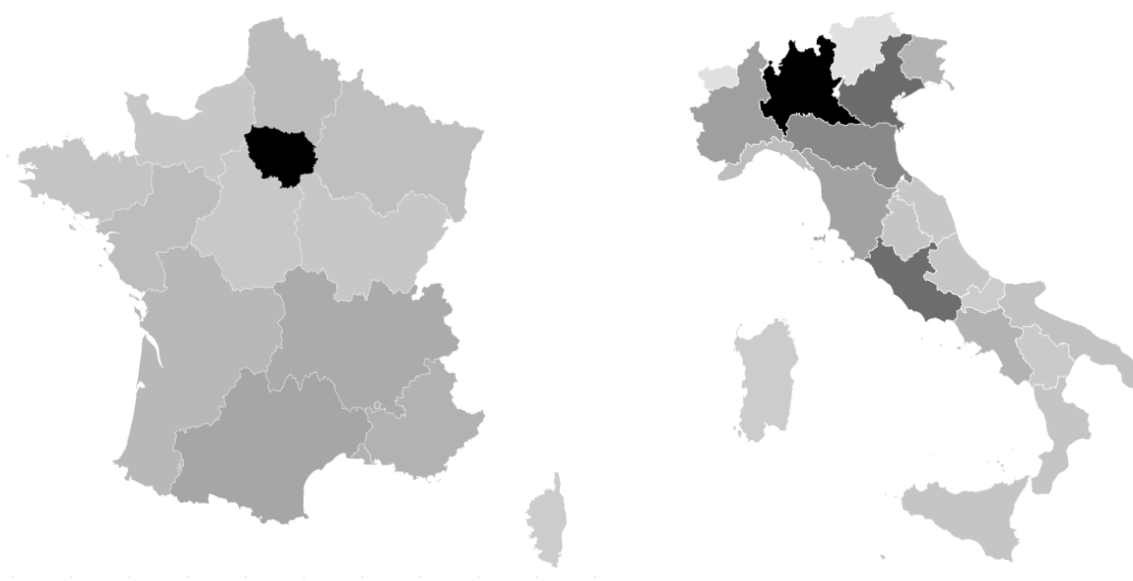


Figure 16. Graphical representation of the regional distribution of winning firms

5 | DISCUSSION AND CONCLUSION

5.1 | *Discussion of the results*

This paper has analyzed the participation and performance of Italian firms in World Bank procurement contracts over time, while also comparing their performance with Italy's G7 and EU counterparts. The findings indicate that Italian firms underwent a period of underperformance in the early years, followed

by a remarkable outperformance in terms of contract value between 2010 and 2015. The number of contracts awarded to Italian firms eventually surpassed the G7 average, demonstrating resilience in the face of fluctuating market conditions. The study highlights the need to investigate the reasons behind these trends further and understand the factors that contributed to the success of Italian firms during specific periods. In addition, this research provides valuable insights into the dynamics of Italian participation in World Bank-funded projects and offers potential avenues for future investigations to optimize the performance of Italian firms in the global market.

Lastly, our analysis has delved into the geographical distribution of contracts, procurement methods, and sectoral allocations. Italian firms have secured contracts across developing nations, demonstrating a fairly uniform global presence. Specific countries, such as Albania, Egypt, and Ethiopia, have witnessed substantial contracts awarded to Italian firms.

The procurement methods predominantly employed by Italian firms include international competitive bidding and quality and cost-based selection. These two categories account for the majority of contracts, reflecting a strategic approach to securing contracts. The sectoral distribution of contracts is diversified, with the public administration, transportation, and water, sanitation, and waste management sectors being dominant.

Furthermore, the comparative analysis of World Bank contracts awarded to Italian and French firms from 2001 to 2022 reveals distinct differences in their performance and market dynamics. Italian and Spanish firms demonstrate a strategy focusing on securing fewer contracts with higher economic value, whereas French and German firms win more contracts with slightly lower total value. The Italian market exhibits a high concentration of a few dominant firms in terms of both contract quantity and value. This observation is corroborated by the Herfindahl-Hirschman Index, entropy index, and C4 index, all of which show greater concentration within Italy's market compared to France's. These findings suggest that Italian firms should consider adopting strategies to increase their participation and success in World Bank contracts while addressing the issue of market concentration among a selected few dominating firm. Lastly, the characteristics of firms awarded contracts were explored to provide insights for potential strategies and policies aimed at promoting a more equitable distribution of contract awards among firms in the Italian market. The micro-level examination of the Italian and French datasets has shed light on significant variations in key variables, offering valuable insights into the dynamics of procurement success. The statistical analysis conducted using a two-sample t-test with robust assumptions revealed noteworthy differences in several vital parameters. In terms of Employees, the observed p-value of 0.007 indicates a statistically significant disparity between Italian and French firms. This suggests potential variations in workforce sizes, possibly reflecting differences in operational scale or business strategies. Similarly, the p-value of 0.017 for Return on Capital Employed (ROCE) highlights significant differences in the efficiency of capital utilization between the two countries' firms.

However, not all variables exhibited such disparities. For instance, Sales, Publications, and Intangibles/Turnover showed p-values of 0.099, 0.069, and 0.060, respectively, suggesting no statistically significant differences between Italian and French firms in these aspects. This lack of statistical significance could imply a degree of similarity in revenue generation, research activities, and the relationship between intangible assets and turnover.

The findings also unveiled intriguing insights into the industry distribution among the NUTS2 regions, with the Herfindahl-Hirschman Index (HHI) reflecting a relatively low concentration of industries across these areas. These results indicate a diverse mix of industries, pointing to the absence of any dominant sector in a particular region. This diversified industry presence contributes to a well-rounded economic landscape, likely fostering resilience, and adaptability.

Moreover, the distribution of firms by NACE code highlighted the core sectors contributing significantly to contract awards. French firms' dominance in fields like "M - Professional, scientific and technical activities," "G - Wholesale and retail trade," and "C - Manufacturing" underscores their versatile expertise in consulting, commerce, and production. Italian firms' strength in "C - Manufacturing" and their active engagement in "M - Professional, scientific and technical activities" further emphasize their crucial roles.

The geographic distribution analysis painted a nuanced picture. Italy's more centralized representation with high concentrations of firms in regions like "Lombardy," "Veneto," and "Lazio" suggests a targeted strategy based on specific regional strengths. In contrast, France exhibited a dispersed presence across regions, with "Île-de-France" standing out due to its status as a hub for international development projects.

This exploration of firm characteristics and regional distributions offers strategic insights for policy formulation. Strategies to foster a more equitable distribution of contract awards might involve leveraging Italy's specialization while promoting knowledge-sharing among regions. France's widespread engagement signifies a diverse economic landscape, suggesting a need for targeted capacity-building initiatives in regions with lower representation.

The observation on the size of firms in Italy, with a prevalence of small firms and a shortage of medium-sized firms, reflects a structural problem that also extends to the participation of firms in World Bank procurement tenders. This concentration of small firms may explain the presence of a limited number of Italian firms that excel in such tenders, while many others remain excluded from the process. This pattern is similar to what has been observed in analyses on the productivity of Italian firms, with a group of leading exporting firms and a long tail of less competitive firms, a striking paradox that mirrors broader economic trends in the country. This paradox is characterized by a stark asymmetry in

performance among Italian firms. On the one hand, a select group of firms consistently secures a significant share of contracts and excels in terms of contract value and number. These firms showcase Italy's potential for global competitiveness and highlight the country's capacity to thrive on the international stage. However, on the other hand, a considerable portion of Italian firms faces challenges in securing contracts and lags in terms of performance. This asymmetric distribution raises critical questions about the underlying factors contributing to this divide. Understanding the dynamics driving this paradox is essential not only for Italy's participation in global procurement but also for fostering a more equitable distribution of opportunities and benefits among the nation's businesses. Addressing this paradox may involve targeted policies to support smaller and less competitive firms, promoting innovation and efficiency, and ultimately bolstering Italy's overall economic resilience and global standing.

In conclusion, our findings underscore the importance of tailoring strategies to the unique strengths and distribution patterns of firms in each country. By understanding the dynamics revealed through this analysis, policymakers can craft initiatives that optimize the contributions of firms and regions to global development efforts.

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Empowering Italian SMEs: navigating challenges and seizing opportunities in global development bank procurements

**Valentina Meliciani, Luca Policino,
Roberto Urbani**

Paper

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Empowering Italian SMEs: navigating challenges and seizing opportunities in global development bank procurements

Valentina Meliciani, Luca Policino and Roberto Urbani

Abstract. This paper delves into the dynamics of Italian companies' participation in international public procurement, with a primary focus on contracts awarded by the World Bank (WB). Italian firms have historically engaged in competitive global procurement markets, and understanding their performance within this context holds significant policy and economic implications. The paper commences with an exploration of the essential aspects of international public procurement, emphasizing the significance of winning contracts funded by the World Bank. It elucidates the multifaceted nature of procurement processes, highlighting their role in promoting economic growth, sustainable development, and innovation. The historical trends in Italian firms' participation in World Bank contracts are examined, revealing fluctuations in both the number and value of contracts awarded over the past two decades. Policy measures and global economic conditions have influenced these trends, impacting Italy's share in the procurement landscape. Comparative analyses are conducted to assess Italian firms' performance in the broader context of G7 and European Union (EU) countries. Within the EU, a detailed examination of Italian, French, German, and Spanish companies' participation in procurement contracts reveals distinct national trends. The study scrutinizes company-level characteristics and market concentration dynamics, employing the Herfindahl-Hirschman Index (HHI) to gauge market concentration. Furthermore, statistical analyses reveal significant differences in economic and innovation variables between Italian and French companies. The paper concludes by underlining the importance of analyzing participation in international public procurement, emphasizing its potential for economic growth, innovation, and global expansion. It calls for strategic policies and collaboration to enhance Italy's position in the international procurement landscape.

Keywords Public procurement – Italian SMEs - EU member states - Government policy

JEL Classification F23 · H57 · O10

1 Introduction

The international public procurement sector has consistently been a competitive market for Italian companies. Currently, there are approximately twenty Multilateral Development Banks (MDBs), with the World Bank (WB) being the most prominent. The World Bank stands out due to its extensive geographical reach, being the first of its kind, and serving as a model for best practices that have been adopted by other MDBs to maximize effectiveness and efficiency (Mistry, 1995).

The World Bank defines procurement as the acquisition of goods, works, or services by a procuring entity, generally using public funds. Procurement encompasses all activities related to the acquisition process, including the identification of needs, defining technical specifications, selecting appropriate procurement methods, preparing and issuing bidding documents, managing the bidding process, evaluating bids, awarding contracts, and contract management. The World Bank's procurement policies and procedures aim to promote economy, efficiency, transparency, and fairness in the procurement process while ensuring the highest ethical standards (World Bank, 2020). Winning World Bank procurement contracts holds significant potential for companies seeking to expand their business, internationalize their operations, and diversify their target market. By participating in World Bank-funded projects, firms gain access to new markets and clients in various regions across the globe, enabling them to broaden their business horizons and tap into new revenue streams. This international exposure also provides valuable experience in working with diverse cultures, regulations, and business environments, thus further enhancing the company's global competitiveness.

Initially, these banks primarily focused on providing aid to the public sector. However, after post-conflict WWII, reconstruction efforts concluded, they expanded their operations to include the private sector. This shift aimed at generating value for local and national communities beyond the financial aspects of profitability and return on investment (Artige & Nicolini, 2013). The updated objectives involved funding

the establishment of businesses to enhance the single market's functionality and financing projects of shared interest among multiple member states (Clifton, Diaz-Fuentes & Revuelta, 2014).

Examining the World Bank's (WB) data, in the 1990s, Italian firms secured an average of 4% of total contracts. This dropped to an average of 0.5% in the first decade of the 2000s, and then increased to 1.5% through 2020 (Procurement under World Bank Financed Projects, Annual Report). The resurgence was initially driven by policymakers' awareness during the global financial crisis and later by Italian firms seeking new markets and resources. A similar trend occurred with the European Investment Bank (EIB) group, including the European Investment Fund (EIF), which primarily targets European small and medium-sized enterprises (SMEs). The EIF provided over €34 billion to SMEs through venture capital operations and guarantees, helping to mitigate the 2007-2009 financial crisis (Griffith-Jones & Tyson, 2012).

Previous research indicates that the decline in Italian firms' contract value share was mainly due to larger contracts in the civil works sector in emerging countries where Italian firms already had a strong presence (Piga, 2007). In these countries, Dollar & Levin (2005) demonstrated a link between project success and institutional quality, an external factor not always controllable by firms.

Additional factors affecting Italian firms' participation include evolving markets, difficulty entering new MDB-related sectors, and complex bidding processes. Moreover, increased multilateral financing has influenced areas like infrastructure, where Italian firms have lost market share. Infrastructure investments are particularly important in developing countries, as they drive economic growth and reduce population inequalities (Agénor & Moreno-Dodson, 2006; Straub, 2008).

Moreover, securing World Bank contracts can enhance a company's reputation and credibility, as these projects often involve stringent requirements, high quality standards, and rigorous evaluation processes. Successfully delivering on these contracts signals a firm's capability, reliability, and commitment to excellence, which may lead to increased business opportunities and strategic partnerships beyond the World Bank-funded projects.

Diversifying their target market through World Bank procurement contracts also allows companies to mitigate risks associated with economic downturns or market fluctuations in their domestic markets. By expanding their client base and geographical reach, companies can reduce their vulnerability to localized economic challenges and achieve more stable growth. Analyzing Italian firms' participation in tenders funded by the World Bank and other MDBs is crucial for identifying their strengths in international public contracts for goods, services, consulting, and civil works.

The paper proceeds as follows. Section 2 briefly reviews the related literature. Section 3 discusses the data and provides some descriptive statistics on Italy's participation in World Bank procurement, as

well as a comparative analysis of G7 and EU countries. Section 4 shows a comparative analysis within European countries and a firm-level analysis. Section 5 discusses the results and offers several policy contributions.

2 Literature review

Public procurement is a crucial mechanism employed by government through multilateral development banks across the globe to acquire a diverse array of goods and services, all of which contribute to the provision of public goods and services to citizens. The significance of public procurement is evident in its substantial contribution to a nation's GDP and its role in shaping aggregate demand within the economy (Hoekman & Sanfilippo, 2020).

While the primary objective of most national public procurement systems is to ensure the best value for money, it's important to recognize that this is not their sole purpose. Public procurement has a multifaceted role, extending beyond cost-effectiveness. It can function as a tool for pursuing broader industrial policy objectives or for advancing sustainable development goals and the green transitions (Rosell, 2021).

Moreover, it's crucial to acknowledge that government procurement holds significant sway as a driver of demand for businesses. When firms secure government contracts, they are often encouraged to invest more in their operations, expand their workforce, and enhance their overall productivity. This symbiotic relationship between government procurement and the private sector underscores the far-reaching impact of public procurement systems on a nation's economic landscape (Geroski, 1990).

In recent literature there is also interest in the relationship between public procurement (PP) and innovation (Edler & Georghiou, 2007; Uyarra and Flanagan, 2010; Caravella & Crespi, 2021). This attention builds upon earlier contributions that recognized the potential of demand-side policies, like procurement, to influence innovation. Rothwell & Zegveld (1981) indicated that procurement might be more conducive to generating innovation than research and development (R&D) subsidies and could positively impact a firm's inclination toward R&D (Lichtenberg, 1989). Additionally, it can encourage firms to innovate in areas with significant social needs and low market interest. While explicit innovation requirements in procurement contracts can stimulate innovative behavior, even standard procurement contracts can enhance a firm's innovative attitude. Furthermore, public sector purchasing capacity and long-term contracts can enhance a firm's reputation in the eyes of external investors, facilitating access to credit and supporting investments (Caravella et al., 2021).

The realm of international trade research has extensively examined public procurement from the perspective of trade policy objectives. Shingal (2015) sheds light on the interaction between domestic and foreign contractors. The propensity to award public contracts to foreign entities, as opposed to

domestic firms, is influenced by a myriad of factors. These include the relative productivity of domestic contractors, the strength of the local economy, the strength of the currency, domestic election cycles and international agreements, which aim to regulate domestic trends. It is evident that the dynamics of public procurement are not merely economic, but are intricately linked to political, social and policy-oriented dimensions. Gourdon and Messent (2017) confirmed the existence of the multifaceted factors influencing government procurement decisions and offered valuable insights into the economic and policy-oriented dimensions of international trade. Kutlina-Dimitrova & Lakatos (2016) delve into the factors influencing direct cross-border public procurement in EU Member States, revealing intriguing determinants. Notably, the likelihood of a contract being awarded cross-border is positively influenced by contract value but negatively impacted by the number of bids; and country-specific characteristics, such as GDP per capita and trade-to-GDP ratio, exert a positive effect on the probability of cross-border procurement.

World Bank procurement processes are also considered a form of public-private partnership in management science literature, as they involve collaboration between public and private sectors to efficiently deliver public services or infrastructure projects. Rossel and Saz-Carranza (2020) found that public-private partnerships (PPP) policy adoption is influenced by legal traditions, EU membership, transparency, low corruption levels, government size, and GDP per capita. Therefore, Italian companies probably need to understand EU regulations and competition rules to succeed in PPP procurement. Casady (2021) demonstrates that varying combinations of institutional factors, such as market reliability, political and social will, and regulatory regimes, drive PPP market performance across countries, with PPP capacity being sufficient but not necessary, and market transparency playing a less crucial role than previously thought. Tan & Zhao (2021) emphasize that good governance, fiscal capacity, and past PPP experiences contribute to the adoption of PPP projects in China, which can be linked to the growth of Chinese companies that have successfully won an enormous number of World Bank contracts in the last decade due to their ability to meet international standards.

This literature review underscores the multifaceted significance of public procurement, both at the national and international levels. Beyond its traditional role in securing value for money, public procurement emerges as a powerful tool for governments to achieve broader industrial policy objectives and sustainable development goals. Moreover, it plays a pivotal role in fostering innovation, either through explicit requirements in procurement contracts or by signaling a firm's commitment to innovation. The international trade perspective reveals that public procurement decisions are influenced by a complex interplay of economic, political, and social factors, with cross-border procurement becoming increasingly significant. Public-private partnerships, exemplified by the World Bank's procurement processes, highlight the importance of legal, regulatory, and governance factors in shaping international procurement outcomes. As we delve further into the dynamics of Italian companies' participation in international public procurement, these insights from the literature will provide a valuable foundation for our analysis and policy recommendations.

3 General overview

This paper is based on the World Bank's preliminarily reviewed data on procurement contracts. The dataset¹ reports both the number and value of procurement contracts awarded by each country from 2000 to 2019. We analyze two World Bank (WB) datasets containing information on awarded contracts subjected to review by WB authorities. The two datasets respectively cover the period from 2001 to 2016 and from 2017 to 2022. Data concerns borrower countries and procurement methods, sectors, and categories. This part involves a descriptive analysis of the data to gain key insights into trends and decide what to focus on by addressing various research questions.

3.1 Italian participation in World Bank procurement

Figure 1 plots the evolution of the yearly values and numbers of contracts awarded to Italian firms during each of the years covered by our dataset.

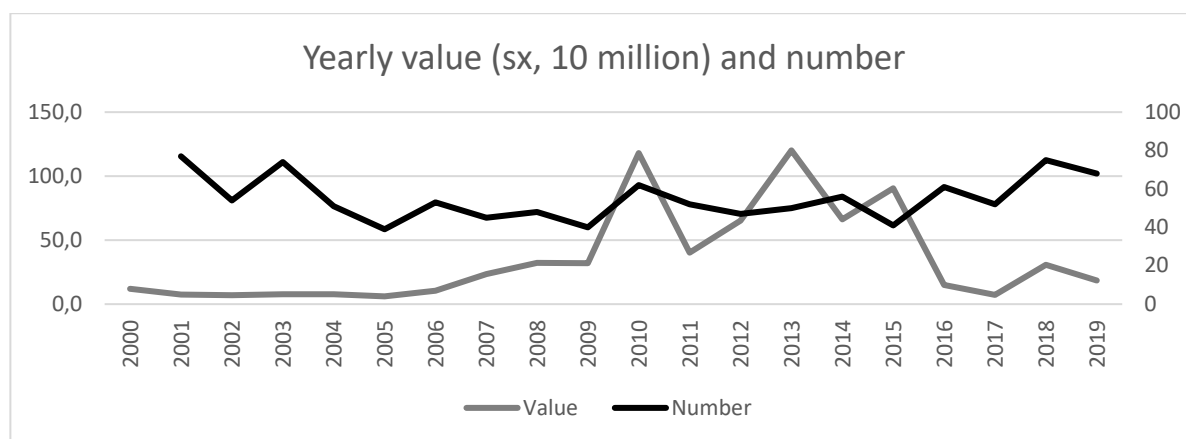


Figure 1. Yearly values and numbers of contracts awarded to Italian firms

The total value of contracts awarded to Italian firms during these years amounts to 7,1 billion dollars. This number is not evenly spread among the different years taken into consideration, with an average of 359 million and a coefficient of variation of 1. We can distinguish at least four periods, each characterized by a specific trend: from 2000 to 2005; from 2006 to 2009; from 2010 to 2015; and from 2016 to 2019. **Tab. 1** shows the key statistics on these periods.

Period	Average (10 million)	Standard Deviation	Coefficient of Variation
2000-05	8,01	1,83	0,23
2006-09	24,51	8,89	0,36
2010-15	83,40	29,09	0,35
2016-19	17,89	8,47	0,47

Table 1. Key statistics on value of contracts awarded to Italian firms

¹ <https://finances.worldbank.org/browse?category=Procurement&limitTo=datasets>

The first period (2000-05) is characterized by low volatility, but an overall halving of the yearly value of the awarded contracts. Values ranged from a maximum of 119 million (2000) to a minimum of 60 million (2005), the average was 80 million and the coefficient of variation only 0.23. During the second period, from 2006 to 2009, values started to significantly increase each year: +71% in 2006, +125% in 2007, +38% in 2008. Growth temporarily stopped in 2009 but peaked in 2010 (1,179 billion) with an increase of 268% compared to the previous year (320 million). From 2010 to 2015, values were relatively high, with an average of 834 million, and volatile, with a coefficient of variation of 0.35. The last three years of the dataset (2016 - 2019) showed some kind of *reversion to the mean* dynamic. In 2016 (148 million) there was an 84% drop compared to 2015 (905 million). The 2016-2019 average is 178 million, much lower than that of the 2010-2015 period. These numbers are closer to the 2006 – 2009 period, but with yearly decreases instead of increases such as -84% in 2016; -51% in 2017. In 2018 (307 million) there was a yearly increase of 319%, but it was followed by a 40% drop in 2019 (185 million). This high volatility is illustrated by the coefficient of variation of this period (0.47) being higher than that of all the other periods mentioned before.

The total number of contracts awarded to Italian firms during the years covered by our dataset is 1045. This time-series shows less variability than the one just analyzed: the coefficient of variation is only 0.21, while the average yearly number of contracts awarded is 55. Also in this case, we chose to divide our data into sub-periods, each characterized by a specific trend: 2001-2005; 2006-2015; 2016– 2019. **Tab. 2** shows the key statistics on these years.

Period	Average	Standard Deviation	Coefficient of Variation
2001-2005	59,00	14,41	0,24
2006-2015	49,40	6,39	0,13
2016-2019	64,00	8,51	0,13

Table 2. Key statistics on number of contracts awarded to Italian firms

The average of the first period is 64 projects every year, but the yearly growth is almost always negative: -30% in 2002, -31% in 2004, -24% in 2005. Thus, the period is characterized by a decline in the annual number of projects awarded to Italian companies: from 77 projects (2001) to 39 (2004). This decrease is particularly intense since this is also the period with the highest coefficient of variation. In 2006, a rebound of +36% interrupted the decline: the yearly number of projects increased from 39 to 53. The following years, until 2015, present a stagnating yearly number of projects awarded: fluctuating between a minimum of 40 (2009) awarded projects and a maximum of 62 (2010), with an average of 49. Except for 2010 and 2015, no yearly increase or decrease is higher than 20% in absolute value. The standard deviation (6,39) is the lowest of the three subperiods, further highlighting the stagnant dynamic of these years. The number of projects started increasing significantly in 2016, starting another *reverse to the mean* dynamic. The annual increases in 2016 (+49%) and 2018 (+44%) are significantly

higher than the small decreases of 2017 (-15%) and 2019 (-09). At the end of the period (2019) the number of projects is 68, showing a return to values comparable to those at the beginning of our dataset. On the one hand, the average number of projects in this period is 64, higher than those of the first declining period (59). On the other hand, the increase has been less sharp than the initial decrease, as illustrated by a lower coefficient of variation (0,13 compared to 0,24).

To better grasp the evolution of the two time-series just described, figure 2 shows the annual percentage deviation from the 2000-2019 means of both the number and the value of projects awarded.

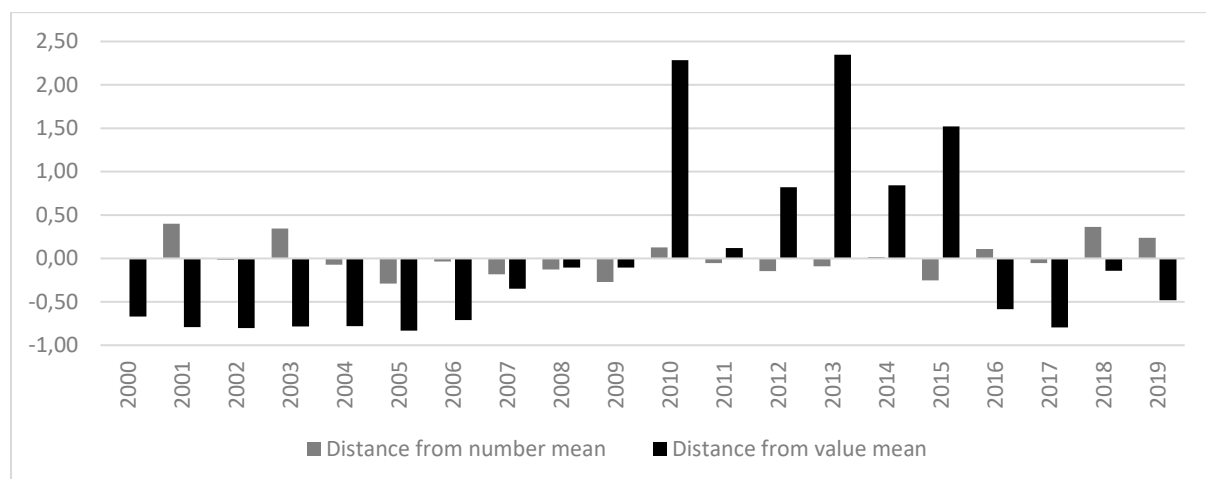


Figure 2. Annual percentage deviation from the 2000-2019

The analysis of the annual value and number of projects awarded to Italian firms presented so far leads to some preliminary observations. For the first years of our dataset, Italian firms have won a decreasing number of contracts, but of an increasing value. After the Global Financial Crisis, Italian firms won contracts of significantly higher value compared to the past, despite the number of contracts diminishing and stagnating from 2006 to 2015. Lastly, while the annual value of contracts awarded decreased, becoming similar to those of the beginning of the century, their number increased. Overall, it looks like the two time-series are negatively correlated. It looks like Italian firms have been able to either win relatively less contracts of higher value (in the middle of our dataset) or relatively more contracts of lower value (at the beginning and at the end of our dataset). Before reaching any conclusion, and formulating policy advises, we need to understand which of the dynamics highlighted is characteristic of Italian firms. In the next section, we compare Italian data with those of other advanced economies.

3.2 Comparative analysis of G7 and EU countries

We compare Italian firms' data with those of their peers from the G7 countries: the United States, the United Kingdom, Germany, Japan, Canada, France. Figure 3 plots the yearly values and numbers of contracts awarded to Italian and G7 firms. G7 data are averages.

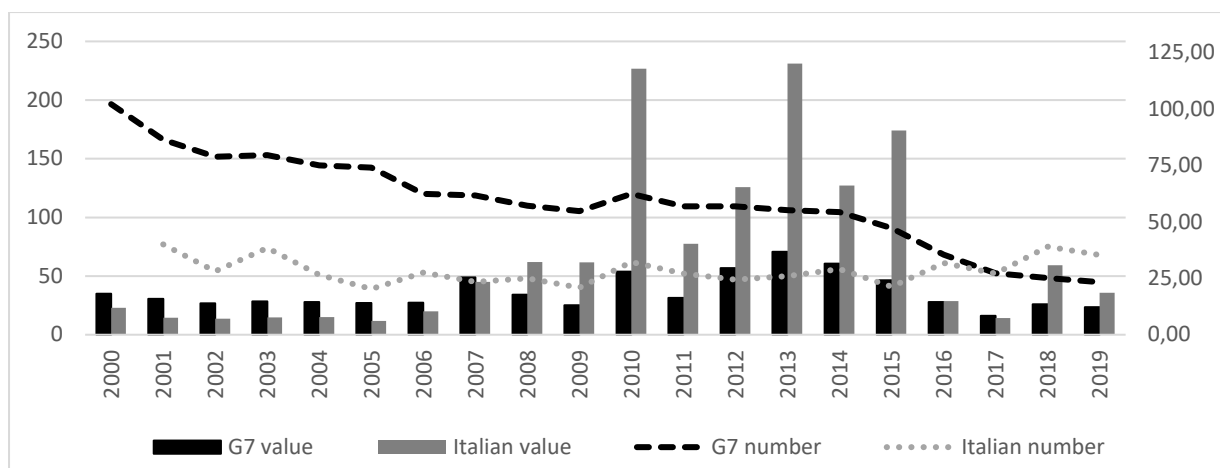


Figure 3. Yearly values and numbers of contracts awarded to Italian and G7 firms

To facilitate the comparison, tab. 3 points to the key statistics on the values of contracts won by G7 firms, divided according to the sub-periods described before.

Period	Average (10 million)	Standard Deviation	Coefficient of variation
2000-05	15,18	7,47	0,49
2006-09	17,61	13,78	0,78
2010-15	27,70	28,76	1,04
2016-19	12,16	10,91	0,90

Table 3. Key statistics on the values of contracts won by G7 firms.

Looking at the first subperiod (2000-2005), G7 firms won contracts having an average annual value that is almost double those won by Italian firms during the same period: 151 million for G7 firms, and 80 million for Italian ones. There is a clear underperformance of Italian firms that is worth investigating. Italian firms start to perform relatively better after 2006: the difference with the G7 average is still negative (-27%), but the gap is quickly closed: in 2009 Italian values are already 145% higher than the G7 average. The average annual value of this period (2006-2009) is 240 million, which is significantly higher than the G7 (176 million). As mentioned before, the period from 2010 to 2015 is the one where the annual values of Italian contracts are the highest in our dataset. The years 2010-2015 were exceptionally positive not only compared to the Italian firms' historical trend, but also compared to the other G7 countries. In 2010, Italian values are 323% higher than the G7 average, and they are always at least double than that until 2015. While in 2006 the total yearly value of the projects awarded to Italian firms accounted for only 10% of those won by all the G7 firms, they accounted for more than 50% in 2010 and 2015. Figure 4 shows the same pattern comparing Italian values with those of the main EU countries: France, Germany, and Spain. There is an initial underperformance from 2000 to 2005, followed by a strong outperformance from 2010 to 2015. Finally, there is no clear leader from 2015 to

2019. We can also see some similarities with the Spanish data that might be worth investigating in future research.

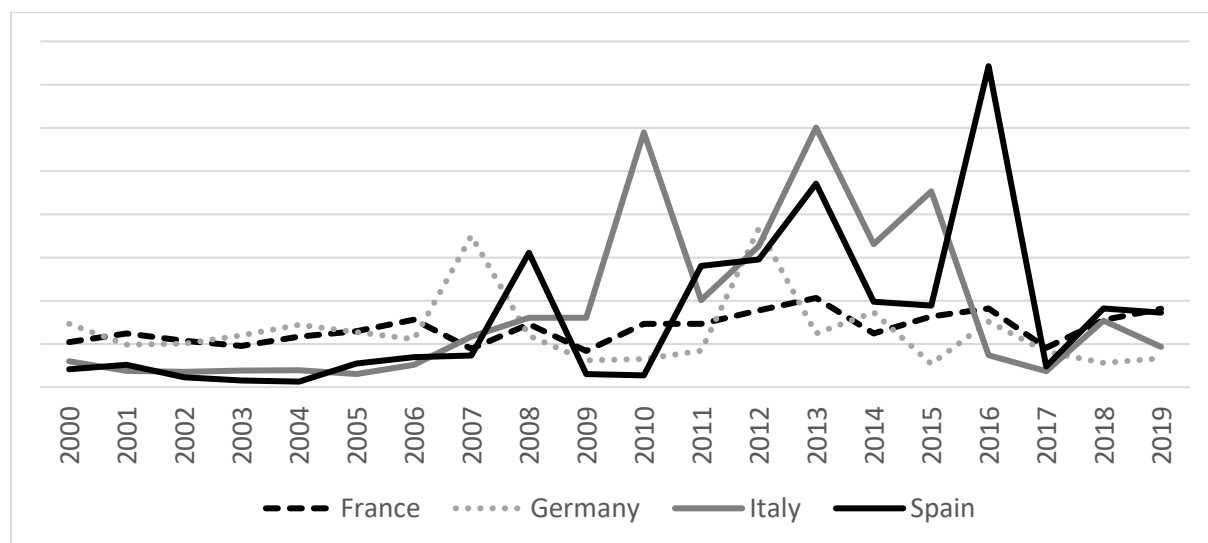


Figure 4. Yearly values and numbers of contracts awarded to the main EU countries

To facilitate the comparison, table 4 points to the key statistics for the number of contracts won by G7 firms, divided according to the sub-periods described before.

Period	Average	Standard deviation	Coefficient of variance
2001-2004	153,91	76,07	0,49
2005-2015	112,45	62,71	0,56
2016-2019	53,40	27,00	0,51

Table 4. Key statistics on the number of contracts won by G7 firms

There are important differences between G7 and Italian data. Looking at the first period (2001-2004), the average annual number of contracts awarded to G7 firms is almost triple that of Italian ones, while the coefficient of variance is the double (0,49 vs 0,24). During the second period, Italian firms start catching up: the averages decrease for both G7 and Italian countries, but the annual average number of awarded contracts to the former (112) is still double those of the latter (49). Moreover, G7 numbers are less stagnating than Italian ones: the coefficient of variance of the former is increased compared to the first period (0,56 for G7 vs only 0,13 for Italy). Surprisingly, during the last period (2016-2019) Italian firms finally catch up with G7 numbers and surpass them. The G7 average for the period is 53, while the Italian one is 64. Figure 5 shows that the outlook is improving for Italian firms: from accounting for the 5% of contracts awarded to G7 firms until 2017, to more than 20% in 2019.

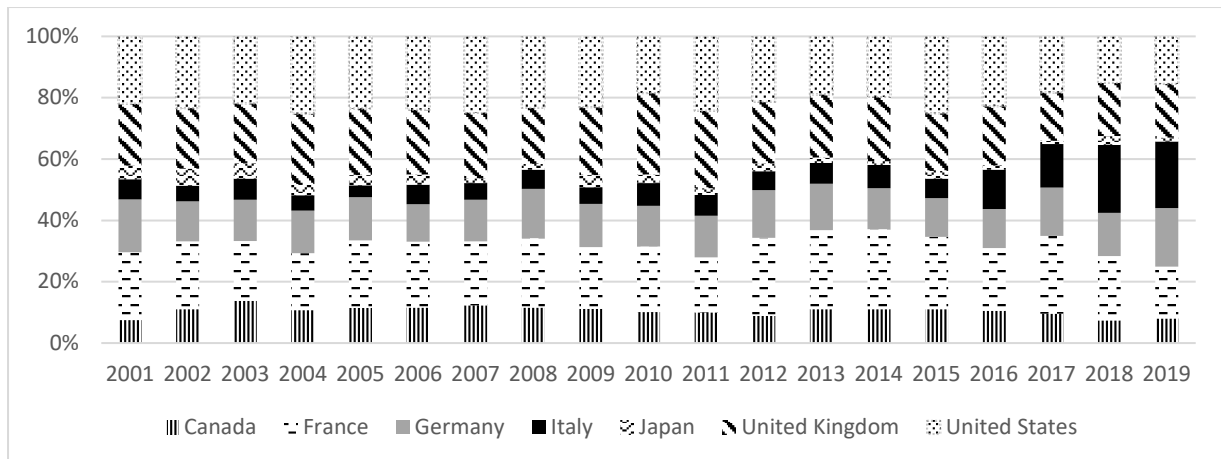


Figure 5. Annual number of contracts awarded to G7 firms

The comparative analysis with G7 peers, and the particular focus on the EU ones, confirm the findings of the trends highlighted during the analysis of the Italian data. Italian firms performed relatively poorly until 2006, when the annual value of their contracts started increasing sharply, outperforming G7 and EU peers. The best performance happened during the years 2010-2015, when Italian values were exceptionally high compared both to their historical trend and the peers from other advanced economies. It is worth investigating the reasons behind these trends.

Concerning the yearly number of contracts, Italian firms eventually caught up and surpassed G7 averages. However, the data shows that this is not due to an exceptional performance of Italian firms compared to its historical trend. Italian values became similar to the first period; the outperformance is due to a sharp decrease of the G7 averages during all the period considered. This highlights a resilience of Italian firms. Their stagnating values until 2015 and slow increase since then stand in sharp contrast to the G7's constantly decreasing performance. Thus, from the point of view of numbers, this analysis highlights the positive performance of Italian firms compared to their G7 peers.

4 Comparative analysis within European countries: national trends, firm-level analysis and market concentration dynamics

Evaluating the number of contracts awarded to companies from each nation within the dataset results in a ranking based on the total number of contracts awarded and one based on the total value in U.S. dollars. Interestingly, Italy ranks 51st in terms of the number of contracts won but ranks in the top ten (4th position) in terms of the value of contracts obtained.

Focusing the analysis on four European Union countries (Italy, France, Germany and Spain) shows (figure 6) that Italy and Spain have the same structure, i.e., a low number of contracts won but a high economic value. In contrast, France and Germany follow the opposite trend, with more than double the number of contracts won but a slightly lower total economic value. The sum of contracts awarded to

Spain and Italy does not reach the total of those awarded to Germany and is less than half that of France.

Analyzing the two distributions in more detail, the number of contracts won in the twenty years studied is almost always the same. It changes in some years for Italy and Spain, which alternate outperforming each other a few times from 2011 onward.

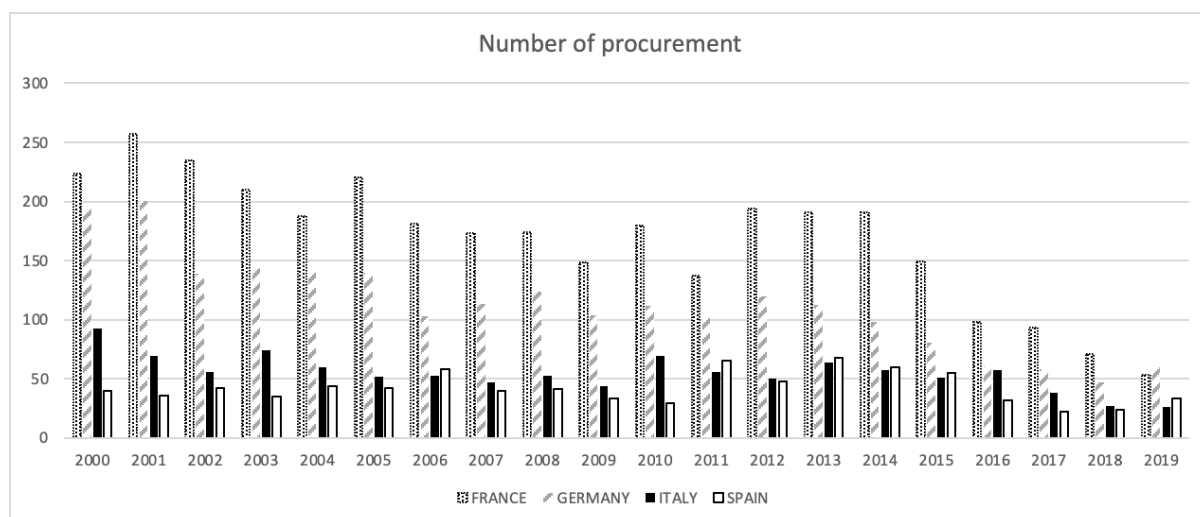


Figure 6. Comparing the numbers of contracts awarded by the first four EU countries

On the contrary, the trend in value (figure 7) is very different; in fact, for Italy and Spain, the most important growth, which significantly increases the average value, occurs after 2011, precisely in the years that make the economic value of contracts awarded increase exponentially.

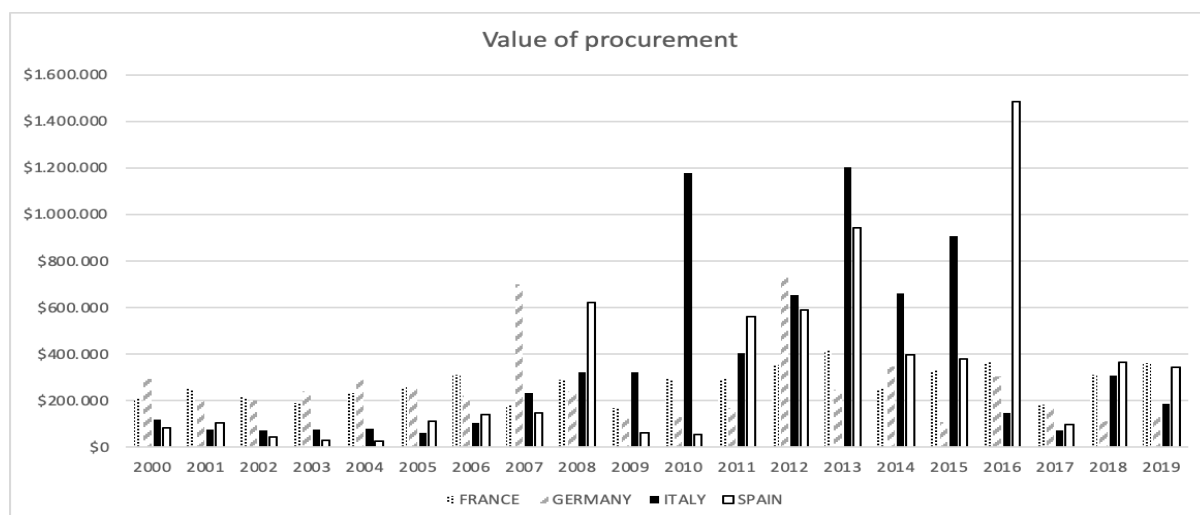


Figure 7. Comparing the values of contracts awarded by the first four EU countries

Continuing the a more detailed analysis of contracting companies with a comparison between Italy and France (table 5), the stark difference in the number of suppliers awarded contracts between the two

nations is evident. In fact, Italian organizations for the same period (2001-2022) turn out to be only 30 percent of the total number of French organizations.

Moreover, Italian companies secure only 1/3 of the total number of contracts awarded to their French counterparts. This striking difference highlights the challenges faced by Italian companies in participating in World Bank contracts, with an average of only 26 contracts per year throughout the 20-year analysis period. However, when comparing the average number of contracts per company, the results are more aligned. Firms from both countries manage to secure an average of approximately 2.5 contracts. This suggests that the lower number of contracts won by Italian firms is due to a lower number of firms which succeed in procurement tenders. The final metric evaluated in this analysis is the total contract value. Interestingly, despite the significant disparity in the number of contracts obtained by Italian firms, the overall dollar value of their contracts remains about 20 percent higher than that of French companies.

	FRANCE	ITALY
SUPPLIER	1597	537
TOT PROCUREMENT	4061	1316
AVG PROCUREMENT	2,54	2,45
VALUE	\$ 6.117.978.848,83	\$ 7.356.635.941,96

Table 5. Comparison between Italy and France

Upon examining the companies based on the number of contracts awarded and comparing the top ten firms in each of the two nations, it becomes evident that French companies secure a substantially higher number of contracts than their Italian counterparts.

When examining persistence, which refers to the consistency with which companies win contracts over a 21-year period, it is expected that a firm capable of winning numerous tenders would maintain this success over time, securing at least one contract per year. French companies, particularly those at the top of the rankings, demonstrate high persistence with a value of 20 out of 21 years, while Italian companies exhibit lower persistence, with a value of 15 out of 21 continuous years. This shows that French companies may have developed skills that allow them to consistently win contracts or the fact that they participate in many more tenders in total also increases the award rate, which is three times higher than in Italy. Conversely, Italian companies display lower persistence but still maintain a respectable level, seemingly adopting a quality-focused strategy in which they participate in fewer contracts but manage to win all of them.

The final descriptive statistic highlights the maximum number of contracts secured by a single company in one year. A French company managed to win as many as 19 contracts within a single year, while the maximum number for Italian companies was 11.

These descriptive statistics suggest that the Italian market is characterized by a high concentration of a selected few companies that dominate in terms of both the number and value of contracts won. To explore this hypothesis further, we conducted several concentration analyses.

The initial indicator employed in our analysis is the Herfindahl-Hirschman Index (HHI), which measures market or economic sector concentration by calculating the sum of the squared market shares of the firms. An HHI value of 1 represents high level of concentration, while a value of 0 represents low level. It was calculated by measuring the market share, which tells us the percentage of the value of all contracts awarded to a company, out of the total value of contracts that year. We then calculated the square of the market share for each individual company and added up all the squares to obtain the HHI. As depicted in figure 8, Italy exhibits a higher concentration level compared to France.

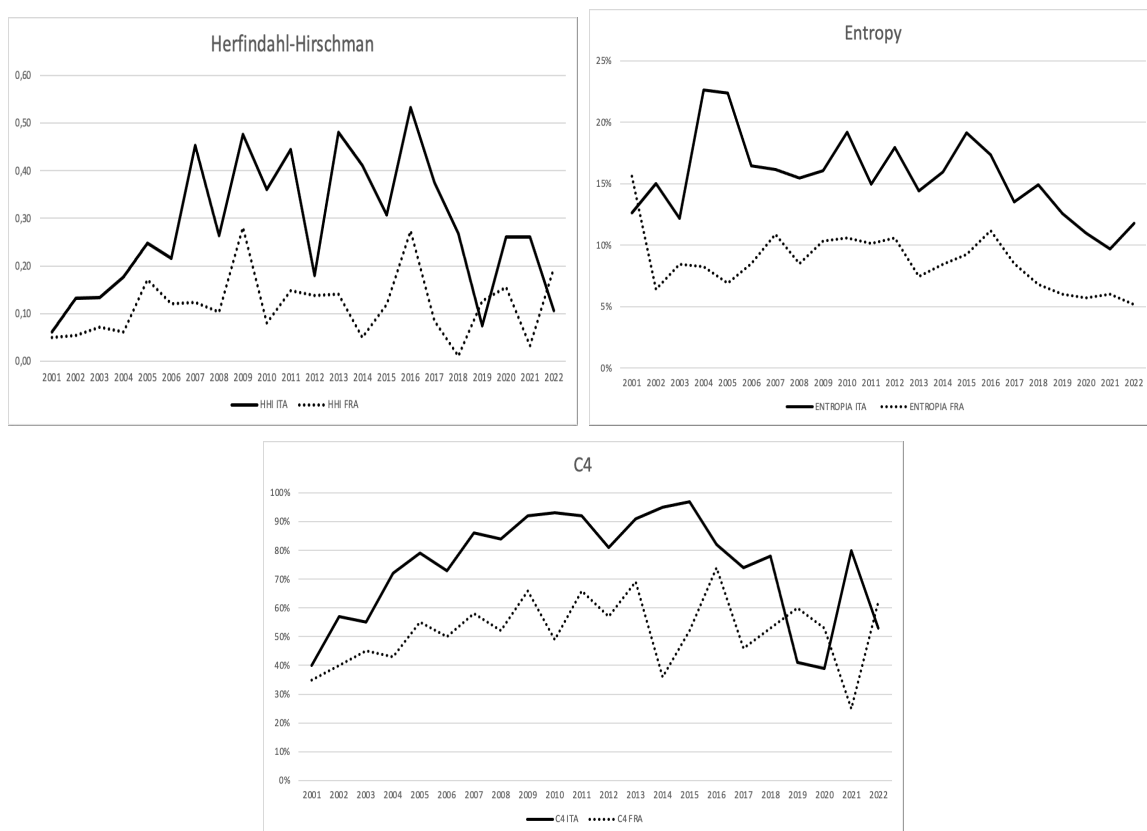


Figure 8. Concentration indices for France and Italy (2001-2022)

Our second approach utilizes the entropy index. Entropy is a measure used to quantify the level of diversity or variety within a distribution of categories. In the context of the presented data, entropy is calculated based on the frequency of appearance of different companies. It involves assessing the normalized probability of each company's appearance and combining it with the logarithm of that probability. This resultant entropy value indicates the contribution of each company to the overall diversity. A higher entropy value suggests a more diverse distribution, while a lower value indicates a more concentrated distribution. In our data, the entropy values for both Italian and French companies

across the years show interesting trends. In the case of Italian companies, the entropy values fluctuate, ranging from 10% to 23%, with a notable peak in 2004. This suggests varying levels of diversity in company appearances within the dataset over time. On the other hand, French companies exhibit a comparatively more stable pattern, with entropy values ranging from 5% to 16%. Both Italian and French companies seem to have experienced increased diversity in their appearances around the mid-2010s, as indicated by the higher entropy values during those years.

Lastly, we employ the C4 index to measure the concentration of values in a distribution. In several years, such as 2004, 2005, 2007, 2008, 2009, 2010, 2013, 2014, 2015, 2020, and 2021, Italy's C4 index appears to be relatively high. This indicates that, in these years, there was a high concentration of values within the distribution, with a small number of values representing a large portion of the total data. In contrast, France's C4 index fluctuates over time but generally remains lower than Italy's. This implies that the value distribution for procurement in France is less concentrated compared to Italy.

The analysis reveals significant differences in firms performance. While Italian and Spanish companies secure a lower number of contracts but with a high economic value, French and German companies follow the opposite trend, winning more contracts with a slightly lower total economic value. The Italian market is characterized by a high concentration of a few companies dominating both the number and value of contracts won. This concentration is supported by the Herfindahl-Hirschman Index and C4 index, which indicate that Italy's market is more concentrated than France's. Overall, these findings suggest that Italian companies may need to explore strategies to increase their participation and success in World Bank contracts, while also addressing the high concentration of a selected few dominating companies within the market. The next section addresses this issue by analyzing the characteristics of companies that are awarded contracts.

We compared the Italian and French company datasets to uncover variations in key variables, including Employees, Sales, Publications, Intangibles/Turnover, and Return on Capital Employed (ROCE). The statistical analysis employed a two-sample t-test with a two-tailed distribution, considering unequal variance heteroscedasticity assumptions. The resulting p-values for the examined variables were as follows: Employees ($p = 0.007$), Sales ($p = 0.099$), Publications ($p = 0.069$), Intensity (Intangibles/Turnover) ($p = 0.060$), ROCE ($p = 0.017$), Turnover ($p = 0,059$) and Intangibles ($p = 0,040$). These p-values represent the likelihood of observing the obtained sample results or more extreme outcomes under the assumption of no substantial disparities between the Italian and French datasets. Proper consideration of the chosen significance level (α) is crucial when interpreting the findings. The analysis suggests compelling evidence of significant differences in the variables of Employees, Turnover, Intangibles and ROCE, whereas no statistically significant disparities were detected in the variables of Sales, Publications, and Intangibles/Turnover.

The results are presented in table 6 together with the descriptive statistics of several variables for Italian and French companies that have won a World Bank procurement in the last two decades. Overall, there are some similarities and differences in the characteristics of these companies from the two countries.

	ITA	FRA	ITA	FRA	ITA	FRA	ITA	FRA	ITA	FRA
	Employees		Sales		Publications		Intangible Intensity		ROCE	
Mean	1158	225	326	44,4	0,2	0,5	0,2	0,5	8	30
T-Test	0,007***		0,099*		0,069*		0,060*		0,017*	
Median	34	95	9,9	9,7	0	0	0	0	8	14
Standard Dev	6762	345	1565,6	85,1	0,3	0,4	0,3	0,4	37	128
Min	1	1	0	4	0	0	0	0	-286	-137
Max	81365	2132	15692,8	507,4	0,81	1,53	0,81	1,53	137	15

Table 6. Key statistics on selected variables of Italian and French companies

Note: sales values are expressed in million USD.

In terms of the number of employees, the mean for Italian companies is higher than that for French companies. This suggests that Italian companies may be larger than French companies. However, the standard deviation for both countries is relatively high, indicating a wide variation in the size of the companies. Regarding sales, the mean and median for Italian companies are higher than those for French companies. This indicates that Italian companies may have a higher revenue generation capability than French companies. However, the standard deviation for French companies is much larger than that for Italian companies, suggesting that there is a wider variation in the sales of French companies.

In terms of the number of publications (obtained from Bureau Van Dijk's database Orbis Patent), the mean for Italian companies is higher than that for French companies. This may suggest that Italian companies are more active in publishing research or promoting their brand through marketing efforts. However, the standard deviation for both countries is relatively high, indicating that there is a wide variation in the number of publications across companies.

Concerning intangible assets, the mean and median for Italian companies are much higher than those for French companies. This suggests that Italian companies may have a higher investment in intangible assets, such as intellectual property, brand recognition, or customer relationships, than French companies. The standard deviation for French companies is again much larger than that for Italian companies, indicating a wide variation in the level of investment in intangible assets. Regarding ROCE (Return on Capital Employed), the mean for Italian companies is lower than that for French companies. This indicates that Italian companies may have a lower efficiency in generating profits from their capital investments compared to French companies. The standard deviation for both countries is relatively high, indicating a wide variation in the ROCE across companies.

In conclusion, the results suggest that Italian companies may be larger in size, generate higher sales and have a higher investment in intangible assets than their French counterparts. However, French companies exhibit a wider variation in these variables, which may reflect a more diverse business landscape. Meanwhile, French companies seem to have a higher efficiency in generating profits from their capital investments than Italian companies. Looking at the geographical distribution and industries, the results indicate the concentration of industries in different NUTS2 regions, as measured by the Herfindahl-Hirschman Index (HHI).

HHI	NUTS2	Industry
ITA	0,14	0,25
FRA	0,30	0,22

Table 7. Concentration of industries in NUTS2 regions: a comparison between Italy and France

The results show that the industry concentration in NUTS2 regions in the study is relatively low, with HHI values of 0.14 and 0.25, respectively. This suggests that there is a relatively diverse mix of industries across the regions, rather than a few dominant industries.

When we analyze the distribution of companies considering NACE code (figure 9) the results give us some insights. Among French companies, the predominant sectors include "M - Professional, scientific and technical activities," "G - Wholesale and retail trade," and "C - Manufacturing," which collectively make up a substantial portion of the contracts won. This indicates a strong presence of expertise in consulting, commerce, and manufacturing, showcasing their significant contributions to international development initiatives. Additionally, the noteworthy representation in sectors like "J - Information and communication" and "F - Construction" underscores the diverse skills and capabilities of French firms. On the other hand, Italian companies have shown a concentrated strength in "C - Manufacturing," with 113 firms engaged in this sector. This highlights Italy's robust manufacturing capabilities and its pivotal role in contributing to development projects. The significant presence of Italian companies in the "M - Professional, scientific and technical activities" category further emphasizes their expertise in

specialized services, while their involvement in "G - Wholesale and retail trade" and "F - Construction" sectors signifies a broad skill set.

Overall, the distribution patterns reveal the unique strengths and contributions of both French and Italian companies to the international development projects supported by the World Bank. These strengths are reflective of the diverse expertise and capabilities that these countries bring to the table, ensuring a well-rounded and comprehensive approach to global development initiatives.

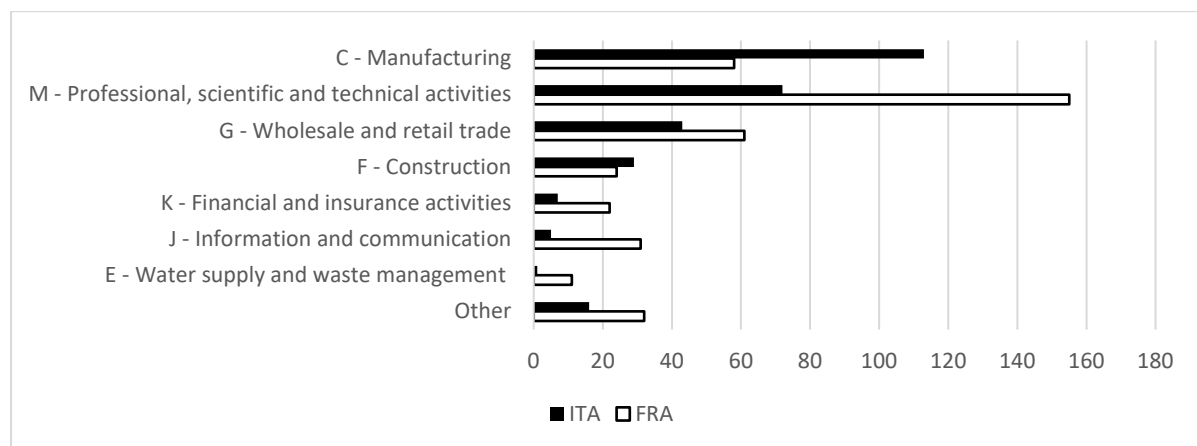


Figure 9. Italian and French winning companies' distribution across NACE Rev. 2 main sections

Finally, we analyze the geographic distribution of companies (figure 10). The data reveals a significant disparity in the magnitude of participation between the two countries. Italy's representation is predominantly concentrated in several regions, with "Lombardy" leading with 83 companies, followed by "Veneto" with 40 and "Lazio" with 39. This indicates a more centralized distribution, potentially reflecting the strong economic and industrial presence in these regions. In contrast, the French companies' distribution spans a broader range of regions, with "Île-de-France" standing out remarkably with 200 companies. This underscores the pivotal role of the capital region, Paris, in housing a substantial number of companies engaged in international development projects. Other regions like "Auvergne-Rhône-Alpes," "Occitanie," and "Provence-Alpes-Côte d'Azur" contribute significantly as well, showcasing France's diverse economic landscape. The absence of representation in "Corsican" among the French regions could be due to various factors, including the nature of projects, economic activity, or the specific focus of the region. Similarly, Valle D'Aosta has no presence, suggesting potential opportunities for increased engagement in international development initiatives.

The contrast in geographic distribution highlights the differing strategies and strengths of the two countries in approaching international development projects. Italy's concentration in select regions speaks to its specialization in certain sectors, while France's widespread presence across various regions emphasizes its diverse capabilities and contributions. These findings underline the need for strategic collaboration and knowledge sharing between regions to optimize their collective impact on global development endeavors.

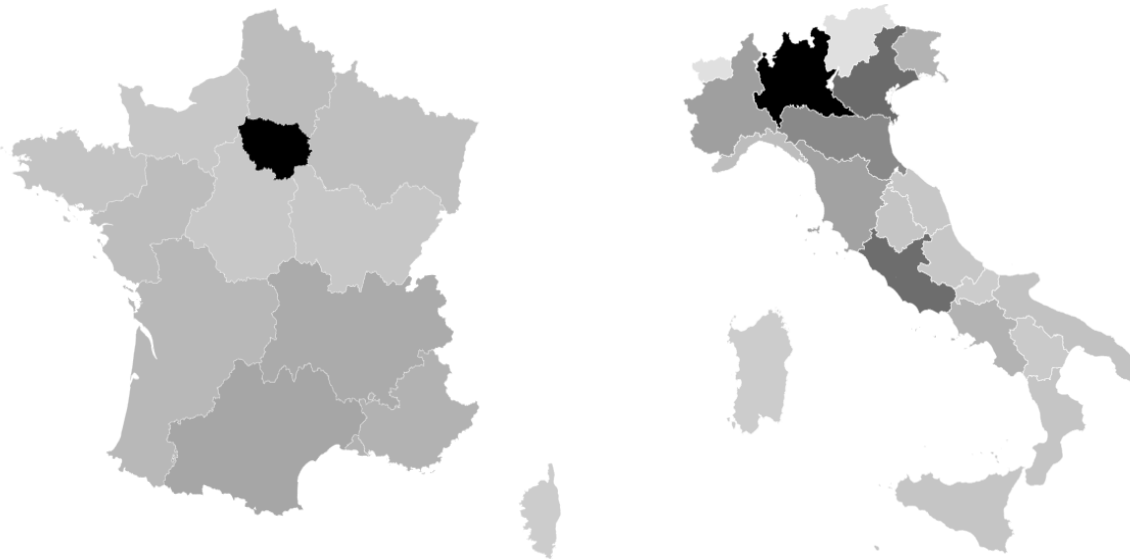


Figure 10. Graphical representation of the regional distribution of winning companies

5 Conclusions and policy implications

This paper has analyzed the participation and performance of Italian firms in World Bank procurement contracts over time, while also comparing their performance with Italy's G7 and EU counterparts. The findings indicate that Italian firms underwent a period of underperformance in the early years, followed by a remarkable outperformance in terms of contract value between 2010 and 2015. The number of contracts awarded to Italian firms eventually surpassed the G7 average, demonstrating resilience in the face of fluctuating market conditions. The study highlights the need to investigate the reasons behind these trends further and understand the factors that contributed to the success of Italian firms during specific periods. In addition, this research provides valuable insights into the dynamics of Italian participation in World Bank-funded projects and offers potential avenues for future investigations to optimize the performance of Italian firms in the global market.

Furthermore, the comparative analysis of World Bank contracts awarded to Italian and French firms from 2001 to 2022 reveals distinct differences in their performance and market dynamics. Italian and Spanish firms demonstrate a strategy focusing on securing fewer contracts with higher economic value, whereas French and German firms win more contracts with slightly lower total value. The Italian market exhibits a high concentration of a few dominant companies in terms of both contract quantity and value. This observation is corroborated by the Herfindahl-Hirschman Index, entropy index, and C4 index, all of which show greater concentration within Italy's market compared to France's. These findings suggest that Italian companies should consider adopting strategies to increase their participation and success in World Bank contracts while addressing the issue of market concentration among a selected few dominating firm. Lastly, the characteristics of companies awarded contracts were explored to provide insights for potential strategies and policies aimed at promoting a more equitable distribution of contract awards among firms in the Italian market. The micro-level examination of the Italian and

French datasets has shed light on significant variations in key variables, offering valuable insights into the dynamics of procurement success. The statistical analysis conducted using a two-sample t-test with robust assumptions revealed noteworthy differences in several vital parameters. In terms of Employees, the observed p-value of 0.007 indicates a statistically significant disparity between Italian and French companies. This suggests potential variations in workforce sizes, possibly reflecting differences in operational scale or business strategies. Similarly, the p-value of 0.017 for Return on Capital Employed (ROCE) highlights significant differences in the efficiency of capital utilization between the two countries' firms.

However, not all variables exhibited such disparities. For instance, Sales, Publications, and Intangibles/Turnover showed p-values of 0.099, 0.069, and 0.060, respectively, suggesting no statistically significant differences between Italian and French companies in these aspects. This lack of statistical significance could imply a degree of similarity in revenue generation, research activities, and the relationship between intangible assets and turnover.

The findings also unveiled intriguing insights into the industry distribution among the NUTS2 regions, with the Herfindahl-Hirschman Index (HHI) reflecting a relatively low concentration of industries across these areas. These results indicate a diverse mix of industries, pointing to the absence of any dominant sector in a particular region. This diversified industry presence contributes to a well-rounded economic landscape, likely fostering resilience, and adaptability.

Moreover, the distribution of companies by NACE code highlighted the core sectors contributing significantly to contract awards. French companies' dominance in fields like "M - Professional, scientific and technical activities," "G - Wholesale and retail trade," and "C - Manufacturing" underscores their versatile expertise in consulting, commerce, and production. Italian companies' strength in "C - Manufacturing" and their active engagement in "M - Professional, scientific and technical activities" further emphasize their crucial roles.

The geographic distribution analysis painted a nuanced picture. Italy's more centralized representation with high concentrations of companies in regions like "Lombardy," "Veneto," and "Lazio" suggests a targeted strategy based on specific regional strengths. In contrast, France exhibited a dispersed presence across regions, with "Île-de-France" standing out due to its status as a hub for international development projects.

This exploration of company characteristics and regional distributions offers strategic insights for policy formulation. Strategies to foster a more equitable distribution of contract awards might involve leveraging Italy's specialization while promoting knowledge-sharing among regions. France's widespread engagement signifies a diverse economic landscape, suggesting a need for targeted capacity-building initiatives in regions with lower representation.

The observation on the size of companies in Italy, with a prevalence of small companies and a shortage of medium-sized companies, reflects a structural problem that also extends to the participation of companies in World Bank procurement tenders. This concentration of small companies may explain the presence of a limited number of Italian companies that excel in such tenders, while many others remain excluded from the process. This pattern is similar to what has been observed in analyses on the productivity of Italian firms, with a group of leading exporting firms and a long tail of less competitive firms.

In conclusion, our findings underscore the importance of tailoring strategies to the unique strengths and distribution patterns of companies in each country. By understanding the dynamics revealed through this analysis, policymakers can craft initiatives that optimize the contributions of firms and regions to global development efforts.

The concentration of Italian companies in World Bank contracts carries significant policy implications that necessitate a strategic shift. Instead of solely focusing on augmenting the quantum of funding available for Italian firms to secure these contracts, policymakers must pivot their efforts towards broadening the pool of Italian companies engaging in the application process. This entails a concerted investment in outreach, training, and capacity-building initiatives, primarily channeled through governmental entities like the Ministry of Economic Development, chambers of commerce, and trade associations. Several strategies can be contemplated in a non-binding manner to attain this objective. First and foremost, fostering robust business networks emerges as a pivotal factor in enhancing the participation of Italian companies in World Bank projects. These networks can manifest as collaborative endeavors, exemplified by network contracts that encourage multiple companies to unite for a joint procurement bid. Such an approach not only mitigates risks but also amalgamates the expertise of diverse enterprises, elevating the overall competitiveness of Italian businesses. To complement the adoption of network contracts, comprehensive information campaigns can be instituted to espouse their advantages and educate companies on the intricacies of establishing and actively participating in such networks. By championing collaborative efforts and facilitating knowledge sharing amongst businesses, policymakers can cultivate an ecosystem wherein Italian companies collectively fortify their standing in World Bank procurement tenders, more effectively seizing global developmental prospects.

Concurrently, the organization of informational sessions and workshops² dispersed across various Italian regions can serve as a means to disseminate awareness regarding World Bank projects,

² The only training activities conducted in recent years are the following two, as listed on the Ministry of Foreign Affairs' website:

The first seminar, "Tender Lab," held in 2018. [Link to Seminar](#)

elucidating the application procedures and requisite criteria for participation. Collaboration with local chambers of commerce and trade associations can be instrumental in widening the reach of these initiatives.

Furthermore, the development of a suite of online training modules, catering to diverse facets of World Bank procurement, is paramount. These modules can encompass aspects like project bidding, financial management, and adherence to environmental and social standards. By making these courses accessible to Italian companies through a dedicated online platform, policymakers can empower businesses with the required knowledge and skills.

Instituting mentorship programs represents another noteworthy endeavor. Such programs would pair experienced companies that had success in World Bank projects with newer or less-experienced firms. This initiative would facilitate the transfer of knowledge and adeptly guide nascent companies through the intricacies of the procurement process. Collaborations with trade associations and chambers of commerce can facilitate the organization and management of these mentorship programs, potentially at the regional or provincial level.

Collaboration with educational institutions, including universities, technical schools, and research centers, is also significant. By integrating courses on World Bank procurement and international development into their curricula, these institutions can contribute to nurturing a pool of skilled professionals who are well-versed in the procurement process. This symbiotic relationship aligns with initiatives like the establishment of Innovation Managers at the Italian Ministry of Economic Development.

Moreover, fostering networks among companies, particularly small and medium-sized enterprises (SMEs), can be instrumental. The government can play a pivotal role in facilitating the formation of consortia or clusters of companies, encouraging them to collaborate in procurement tenders. Such collaborations enable the pooling of resources and expertise, augmenting the competitiveness of Italian companies.

Additionally, facilitating access to finance represents a crucial facet. Collaborative ventures with financial institutions to develop specialized loan products or guarantee schemes can facilitate Italian firms' access to the requisite financing for participation in World Bank projects. This not only expands the pool of companies capable of bidding for contracts but also enhances their likelihood of success. In conclusion, by fostering a more competitive and diversified landscape among Italian companies engaging in World Bank projects, policymakers can not only promote a more equitable distribution of

The second seminar, "Tender Lab," conducted in 2023. This was a hybrid training activity, which, while commendable, may not be sufficient. [Link to Seminar](#)

contract awards but also maximize the benefits of international development opportunities for the Italian economy.

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