POLISH EQUITIES

A JENGA LENS INTO THE POLISH EQUITY MARKET

JENGA I.P

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Table of Contents

Polish Equities - The Jenga Lens

As global investors, our mandate permits us to scour the world for the best investments we can find, understand and value. In most cases, the companies and areas we invest in differ from our initial thoughts and a good example was our allocation to Poland. Since our first investment three years ago, Poland has quickly grown to a sizeable portion of the strategy and currently represents 20% of the portfolio allocation, only behind our largest country, China.

Although painting a top-down macro-driven story provides readers with a more enjoyable and complete briefing, our decision to allocate this much to Polish-listed companies was purely bottom-up individual stock selection. In software, among all 1,241 listed IT Software companies (GICS), Poland's LiveChat is the most profitable software company in the world. Software peers generally target the Software golden rule of 40 (the growth rate + profit margin should exceed 40%). LiveChat reached 86% in 2022, more than doubling the aspirations of its listed software peers. Its closest listed rivals in the chatbot communication industry, like Zendesk and LivePerson, are still loss-making.

In the cyclical gaming sector, many studios can only dream of consistently churning profit margins above 20% year-on-year due to the industry's cyclicality. For Poland's PlayWay, its net income margin has consistently exceeded 40% since reporting began in 2014 without taking on significant debt. Only four listed gaming companies achieved a better operating profit margin than PlayWay's 67% in 2022. Unsurprisingly, all four companies are other Polish gaming studios.

In the European grocery market, finding a retailer growing revenue and earnings above 6% will be above average, given that industry estimates expect the category to average 4% over the next few years. In Poland, retailers like Dino Polska have compounded their profits by 40% over the past ten years. What makes Dino Polska even more interesting is how they've uniquely combined value creation for consumers despite having the best profit margin among its European-listed grocery peers. Since going public in 2017, Dino's shares have returned more than 900%.

The contrasting issue here is that despite the presence of these high-quality, growth companies, the broader Polish market hasn't been a great place for investors. Since 1994, the MSCI Poland index has compounded at just 1%. Over the past ten years, it's annualised -3.88%, significantly underperforming the MSCI ACWI of 8.44%, and now trades at a P/E of just 6x, less than half of the MSCI ACWI 17.4x.

The divergence between its best companies, in our view, and the overall market is what makes Poland an excellent environment for stock pickers to study and in this Polish briefing, we explore the Polish economy, its growth over the past years, the breakdown of the Warsaw Stock Exchange and four key themes we believe are shaping the investment opportunity set in Poland.

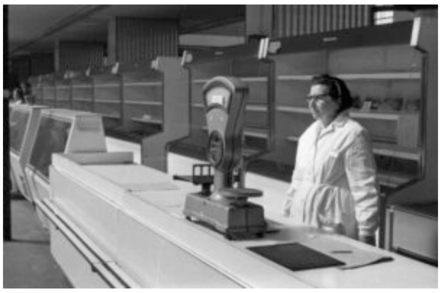
On a personal level, I have an admission. I have never physically been to Poland and the insights here come from the studies and reports companies publish to investors, our conversations with locals who live or left Poland and other research materials. As an outsider, our research will bring a different perspective but not a superior one, and we encourage readers to keep this in mind and combine the briefing with other writings we have included in the appendix.

The Polish Economy Overview

We typically prefer to focus our research on individual company prospects, but situations like our Polish investment case require us to understand the broader shifts and structural changes across an economy. As foreigners, understanding the Polish economy required us to speak to locals, and 90% of the conversations ended up being discussions about life in Poland in the 1980s and the rapid economic shift in the 1990s. For readers interested in a more detailed analysis of this economic shift, we have included papers, articles and books in the appendix that provide a much broader perspective on Poland's transformation.

The Economic Reform of 1989 (The Balcerowicz Plan)

Our interviews and conversations portrayed a sharp contrast in the tone, stories and level of optimism between Poles who left the country during the 1980s from the locals who stayed back and experienced the following decades of economic expansion and development. Generally, the latter group tended to be much more optimistic about life in Poland. A look into Chris Niedenthal's pictures of grocery shopping during the 1980s below shows why many were extremely pessimistic about the economic prospects in the 80s.

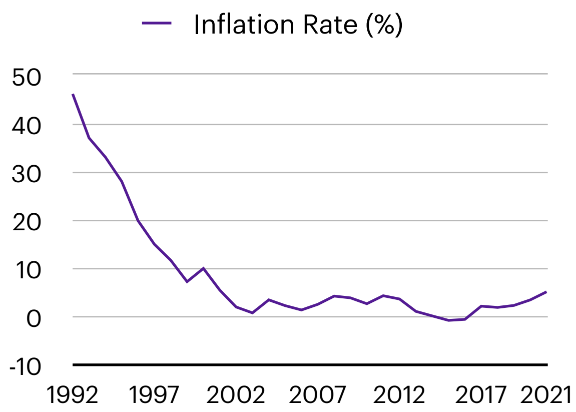


Images: During the 1980s, access to retail products was scarce for most consumers due to food shortages and inefficient store formats. Long queues, delays and protests were the norm. (Chris Niedenthal)

On your left, you have the typical grocery store format in Poland before the arrival of stores like Semeco and the other privately run stores of the 1990s. Grocery items were typically stacked on shelves behind the service counters (left), and customers queued for hours (right) only to get to the service desk and hear almost half of the items needed were either unavailable or in short supply. The widespread hunger crisis eventually led to the 1981 Polish hunger demonstrations, where an estimated 50,000 people, primarily women and children, participated. Consumers who wanted to purchase imported products had to visit the Pewex shops, which only accepted US dollars instead of the Polish złoty and were often seen as a luxury.

Life was extremely tough for the majority, explaining why almost a million Poles emigrated from the country. Hyperinflation climbed to 240% by 1989, the state-owned enterprises were managed inefficiently with bloated cost structures and low productivity, and the country's annual loan and interest payments had climbed to one-sixth of its GDP, which limited the government's ability to borrow additional funds. Dissidents and tension grew, propelling the rise of the Solidarity trade union led by its future president, Lech Wałęsa, Poland's first freely elected president in 63 years.

From an economic lens, the rapid change is often attributed to the Balcerowicz plan, also known as the "Shock Therapy", led by experts like Leszek Balcerowicz, who were tasked to develop a plan to improve the economic situation by fighting hyperinflation, increasing privatisation and foreign trade. The effects were rapid. The number of private businesses incorporated in Poland increased from 1,275 in 1988 to 45,077 by the end of 1991. Inflation fell from 244% in 1989 to 36% in 1993, while the GDP per capita doubled during the same period.



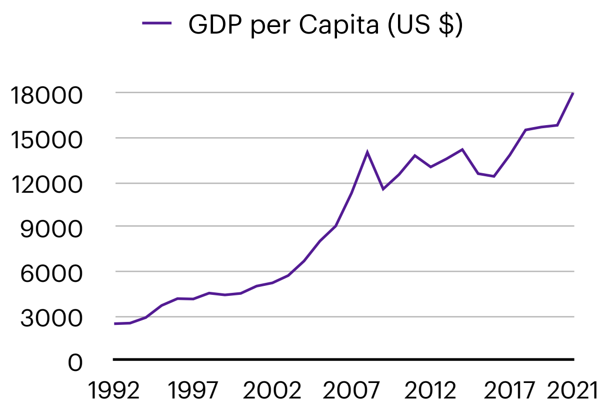


Chart: Poland's economic situation improved drastically after the shock therapy and the new government in the early 1990s. Its GDP per capita increased five-fold over the following two decades. (World Bank)

The Balcerowicz plan wasn't without its critics and adverse effects, such as the initial increase in unemployment rates as the state-owned businesses saw changes in laws and regulations, allowing them to go into bankruptcy.

History shows that it's during these inflectional periods that investing yields its most significant returns. The deregulation and increased private sector support led to a sharp increase in FDI and the reemergence of the Warsaw Stock Exchange, which had just five stocks on its first day of trading in April 1991. One of the many entrepreneurs who took advantage of this period was Marek Piechocki, the co-founder of LPP SA, Poland's leading clothing retailer. Since it was listed in 2001, LPP has returned 19,780% or (28.7% IRR) to shareholders over 21 years.

Company Profile - LPP SA

- The co-founders, Marek Piechocki and Jerzy Lubianiec, started LPP in 1991 with an initial focus on buying Turkish sweaters.
- As the Polish market opened up, clothing tastes broadened and wages increased, Marek spotted an opportunity to create a local brand and launched Reserved in 1998. LPP now has several other brands in the group.
- LPP currently has 2,244 stores with 42% of them in Poland. 93% of its goods are sourced from China across 1,1000+ suppliers, while 65% of the final products are created in Poland.
- LPP is the leader in the domestic retail market and doubles the revenue of its closest competitor, CCC.
- The divestiture of stores in Russia has led to headwinds for the clothing group and the group will have to look more towards Western Europe for future growth across stores and e-commerce.

Economic growth during the financial crisis

Achieving economic growth during the financial crisis of 2007/2008 was a feat only a handful of major economies did. In fact, Poland was the only EU economy that grew its GDP and avoided a recession during the crisis, showing how far and resilient its economy had progressed from the economic reform of the 1990s. After joining the EU in 2004 and the Schengen area in 2007, trade, investment and confidence significantly improved.

Listed companies like Inter Cars credit its increased imports and access to countries like Germany and France for its auto parts between 2004 and 2011, a period operating earnings grew five-fold. Between 2007 and 2014, the EU-28 rose by only 0.7%. In comparison, Poland grew by 24%, far exceeding its neighbouring countries and other European countries.

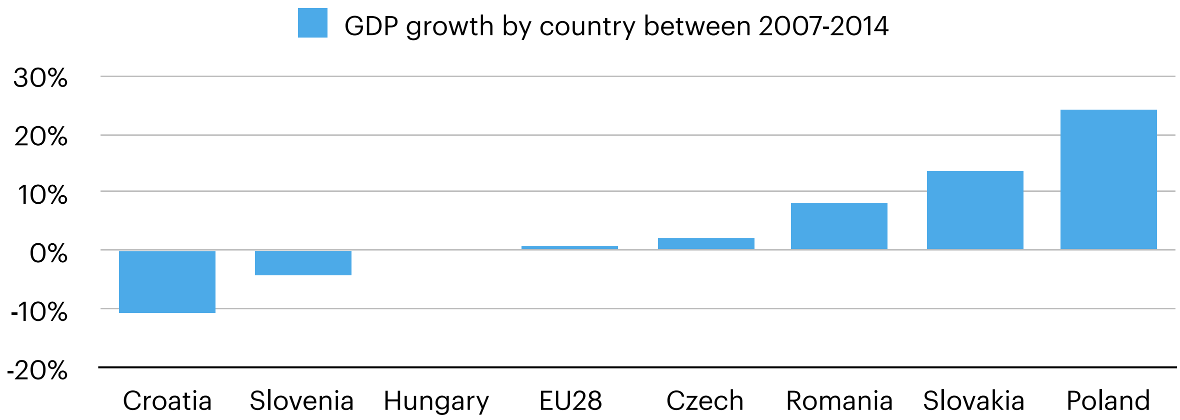


Chart: Poland's GDP grew faster than its neighbouring countries and Europe between 2007 - 2014

Poland's economic expansion during the difficult years of the financial crisis wasn't just attributed to its trade growth with Europe. Polish consumers and businesses had a much lower dependence on credit and complex financial instruments. Domestic debt as a percentage of GDP in 2008 was 53% in Poland, which was fairly lower than its CEE peers and other European countries like Germany, Ireland, Spain and the UK, which had ratios above 100%.

Unlike most EU countries, Poland also maintains its local floating currency (zloty), which enhanced exports and energy imports during the crisis. Joining the euro remains a key topic of debate and we discuss the currency impact on listed opportunities later in our investment review.

An emerging or developed economy?

Well, it really depends on who you ask. For the FTSE, Poland has been considered a developed market since 2018 after its GEIS semi-annual review, its first country status upgrade in over a decade. For the MSCI, Poland is still among the emerging market list despite having a bigger GDP per capita (PPP) and better Human Development Index (HDI) than Portugal.

We'll leave this question for readers to decide, but from an economic perspective, Poland's path is relatively clear to us. While GDP growth will undoubtedly slow due to the law of large numbers and the increasing cost of living in major Polish cities like Warsaw, key economic variables remain healthy. Poland's economic and social progress remains a good case study for frontier and developing economies seeking to drive development and improvement. A walk around the metropolitan Warsaw region will immediately highlight the optimism, energy and modernisation it recently experienced. Before we review its stock market, we must highlight a key area of risk, the impact of the Russian-Ukraine war.

The Russian-Ukraine War Impact

On the day Russia launched a military attack on Ukraine, the Warsaw stock exchange fell by 12.7%, led by companies like LPP SA and Allegro, due to their exposure to Russia. The war has undoubtedly had an impact on Poland beyond its stock market drawdown and we can broadly group this into four key areas:

1. Population: One year later, the net flow of migrants from Ukraine into Poland is estimated at 1.5 million. On a shorter term view, the Polish government expenditure has increased due to defence spending and subsidies, aid and support for migrants and refugees. Poland spent more than $8.8 billion on supporting refugees from Ukraine in 2022, more than any OECD country. On a longer term view, the increased population could have some potential benefits for Poland. Between 60-70% of Ukrainian adult refugees are already working in Poland and Ukrainians have registered 20,000 new businesses in Poland, expected to add $250 million in tax contributions in 2022 alone.

2. Energy and food costs: While not unique to Poland, the inflationary pressure has certainly been felt by Polish households as its inflation skyrocketed to 16%, the highest among the major European economies and almost double the eurozone average. Energy and food prices have significantly contributed to this, with the former climbing to 21.5% at the end of 2022, much higher than the 6.4% recorded before the start of the war. At a company level, industries prone to the effects of food and energy inflation, like retail, food and beverage staples and industrials, have seen their profit margins shrink in recent quarters.

> *"2022 has been an extremely challenging year for all retailers. The outbreak of the war in Ukraine and its macroeconomic impacts have changed the rules of the game. Customers' incomes remain under the pressure of rising inflation and high interest rates, leading to heightened consumer price sensitivity."*
>
> *- President of the Management Board of the CCC Group*

3. Polish businesses operating in Russia: Polish companies with significant operations in Russia had to make a moral and economic decision with their operations in Russia. Although only some listed Polish companies have publicly withdrawn from Russia, a significant number of companies have sold operations in Russia and paused trade. In 2022, exports from Poland to Russia fell by 40% (€4.8 billion).

4. Currency volatility: We have historically viewed Poland's currency as relatively stable even by developed markets standards. At the start of the war, the zloty depreciated by more than 10%, declining to below 4.5 zloty against the US dollar for the first time in decades. Without a hedged strategy, the depreciation in its currency directly impacts its listed companies. On the positive side, a few listed Polish businesses concentrated in sectors like gaming and software make most of their revenue in foreign currency, thus providing a "natural hedge" in situations like 2022.

The Warsaw Stock Exchange

As the Polish economy opened up to private sector activity, the role a stock exchange could play was set to increase and the Warsaw Stock Exchange reopened in April 1991 with initially five companies. The main market has now grown to over 600+ companies with an aggregate market capitalisation of $133 billion.

Its three largest companies are PKN ORLEN ($15 billion), Dino Polska ($9 billion) and PKO Bank ($8 billion).

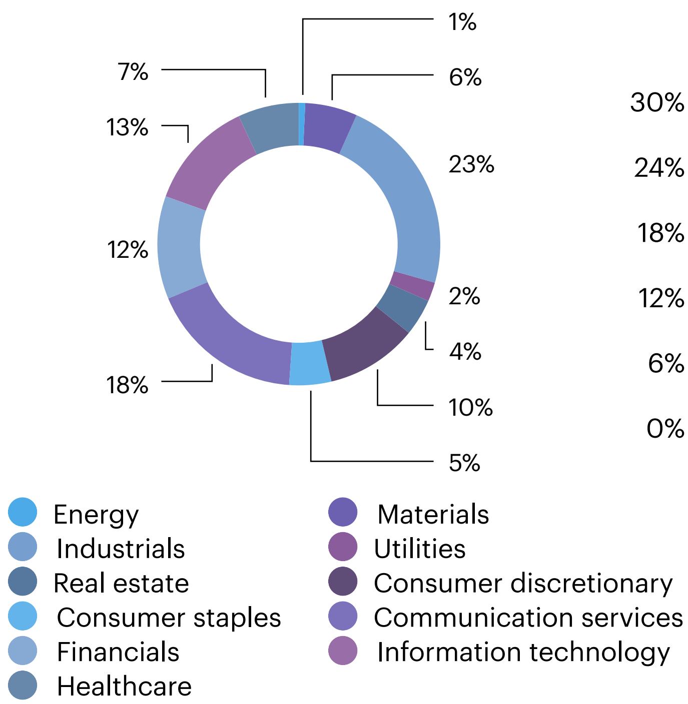
The Warsaw Stock Exchange Key facts

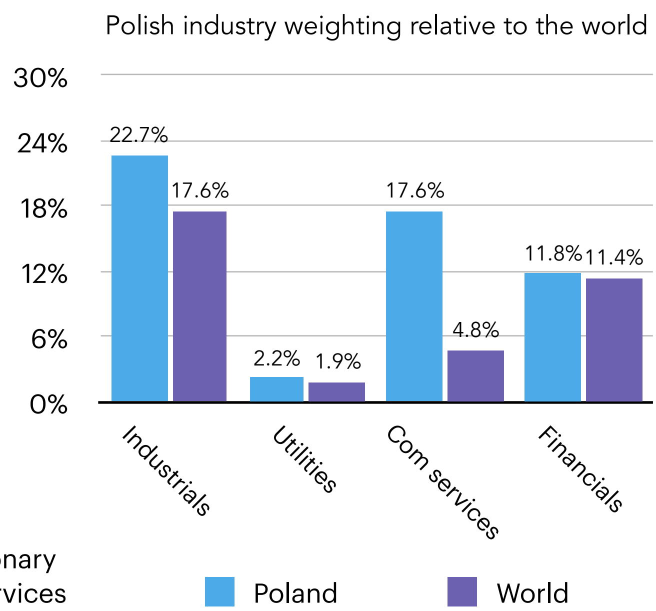
- The modern WSE launched in 1991 with five companies initially
- It has a smaller market, NewConnects, which hosts over 350+ smaller-sized companies
- Foreign investors contributed to 57% of turnover in the Main Market. Only 3% of turnover on the NewConnect is driven by foreign investors

A Breakdown of Polish Equities

The Polish listed companies are somewhat skewed towards micro and nano caps. There are 682 listed Polish companies, but only 25% (173 companies) have a market cap above $50 million, while only 6.5% (44 companies) have a market cap above $500 million. The small size keeps many large institutions uninterested, which is perfect for smaller-sized managers and retail investors. Only 14 companies qualify for the MSCI Poland Index, which currently trades at just 6.1x P/E.

In the table below, we share two charts that portray Polish companies' industry distribution (GICS) and include companies on the main and NewConnect markets. The latter supports smaller companies, like the Alternative Investment Market on the UK LSE.





From the charts, two things quickly stand out:

1. **Communication services overrepresentation**: Communication services, split into telecommunications and entertainment companies, represents 17.6% (121 companies) of all listed Polish companies, more than three times its representation across global markets. One reason is the number of gaming studios listed, which we estimate at 72 companies. We discuss more on the Polish gaming industry later in the investment opportunities overview.

2. **Underrepresentation of Energy:** There are only five listed energy companies in Poland, representing less than 1% of Polish listed companies. Across global markets, Energy represents 3.3% of listed companies. Poland still largely depends on coal imports (72% of electricity generation) and only produces small quantities of crude oil and natural gas, and is heavily reliant on imports. Coal production is primarily concentrated among state-owned groups like PGE.

Performance of Polish Equities

An investment in the WIG Index would have returned just 22% (1.35% CAGR) in 15 years despite its GDP doubling in value. A few reasons contribute to its woeful performance. In the five years to 2007, the WIG Index had risen by 250% (29% CAGR), pushing its P/E to around 22x. The main market of the WSE has traditionally depended on foreign investor activity and sentiment. Research by the Lublin University of Technology estimated that foreign investors generated more than half of the market's turnover, reaching 54% in 2016, with 3/4 of all foreign activity coming from the UK. As a result, sentiment and animal spirits play significant roles leading to increased volatility as seen in the market performance.

As a result, long-term investments in the passive WIG index are likely to yield little results. For stock pickers willing to do the legwork and research individual companies, markets like the WSE are good areas to show the value of active investing.

Like in any market, decent long term investments come from two areas; high quality companies valued fairly or companies at a significant discount to their assets and cash flows. For the next section, we will assess four areas within Polish equities that we believe will yield decent returns over the long term with a focus on the quality opportunities.

The Polish Investment Opportunity

All of the opportunities we have invested in or shortlisted in Poland have come from bottom-up assessments in individual sectors, but to ensure our conviction is matched with a broader top-down view, we decided to compare how Poland performed relative to Europe's largest economies from a stock market view.

In the table below, we have selected six key metrics we assess when understanding companies (3 quality, 1 growth and 2 value) and sorted them with their performance. Each metric examines the percentage of its listed market (excluding financials) that meets each hurdle, e.g. an EBIT margin of at least 10% or a Market Cap/Free Cash Flow of less than 10x. Generally, we prefer looking at countries that add up to more than 120% (right-hand column). We admit that this table and approach wouldn't help forecast future returns, but they will provide some perspective on the potential for finding "hidden opportunities".

	EBIT Margin >10%	Return on Capital >10%	Debt/ Capital <10%	EBIT Growth >10%	EV/EBIT <10x	Market Cap/ FCF <10x	Total
Poland	29.3%	**25.9%**	24.0%	**29.1%**	**30.3%**	**20.8%**	**159.4%**
UK	32.5%	17.6%	26.7%	20.4%	20.6%	17.0%	134.7%
Italy	31.8%	16.8%	8.8%	27.4%	20.3%	15.8%	121.0%
France	26.5%	10.2%	7.1%	22.6%	20.8%	17.0%	104.2%
Germany	26.1%	15.9%	14.8%	24.8%	20.5%	13.3%	115.4%
Spain	36.3%	11.7%	5.3%	21.1%	17.0%	18.1%	109.3%

Table: We assessed Poland versus Europe's five largest economies on six important metrics when evaluating investment opportunities across public markets (excluding banks and insurers). We calculate the percentage of listed companies that meet the various metrics. e.g. % of companies with EBIT margins above 10%. (S&P Capital IQ)

From the table above, we can see Poland performed the best in four of the six metrics and we highlight each in **purple**:

- Valuation: Polish companies are significantly valued less than their European peers. 30% of Polish companies traded below 10x EV/EBIT, considerably less than countries like Germany. The multiples difference on a Market Cap/FCF is just as significant as Poland outperformed the other countries.

- Growth: Poland surprisingly led its European peers, with 29.1% of all listed Polish companies achieving a 3-year EBIT CAGR of more than 10%. We must note, like most indicators, the EBIT growth data is backwards looking and doesn't indicate how future growth looks.

- Return on capital: Poland outperformed Europe's five largest economies from a return on capital basis, with a quarter of all Polish listed companies achieving a return on capital above 10%.

Poland's performance versus its European peers provides a good data point on how Polish equities measure against the rest of Europe's largest economies. We will explore four of these opportunities in Poland at a more micro level:

- The consumer market: Dino Polska
- Information technology services and software: Spyrosoft and LiveChat Software
- The gaming industry: PlayWay
- Industrials: Mo-Bruk

The Polish Consumer Market

With a population of 38 million people, Poland is among the world's top 20 largest consumer markets. Households have significantly benefited from consistent income growth and purchasing power over the past two decades. The income growth was much faster a decade ago relative to more recent years, and a combination of the pandemic effects with the Russian-Ukraine war has impacted current growth levels and the purchasing power of Polish consumers over the short term.

The consumer market key facts

- Poland has a population of 38 million, the 7th largest in Europe.
- E-commerce accounted for 13% of retail sales in Poland and is one of Europe's fastest-growing e-commerce markets
- The Polish consumer experienced one of the worst inflationary pressure in Europe in 2022

With that said, there are still reasons to be optimistic about the longer term growth potential in the Polish consumer market for two main reasons. First, the majority of consumer growth has been concentrated in metropolitan cities. According to the OECD, Poland has the sixth highest regional economic disparity among 29 OECD countries with comparable data. This presents an opportunity to build in regions beyond the metropolitan cities and Dino Polska presents a good case study. Secondly, the longer term trends point towards growing incomes and consumer budgets, which will benefit consumer goods and services.

However, the long term growth in the Polish consumer market has yet to transition into investment options within its public market. There are only 29 listed consumer discretionary or staples companies with a market capitalisation above $50 million in Poland, which is much less than comparable countries with fewer publicly listed companies; Turkey (86 companies) and Italy (88 companies).

Competition

It seems larger multinationals are increasingly aware of the Polish opportunity and started acting on it with the recent wave of expansions into the Polish consumer market. Since the pandemic, Amazon and Shopee, two leading e-commerce platforms, commenced their Polish operations, although the latter has since closed its operations due to intense competition. The domestic leader, Allegro, is undoubtedly feeling the increased pressure and has seen its profit margins shrink by a third since 2020 and its share price has declined by -58% since going public.

While LPP SA continues to lead the apparel market, the arrival of European peers like Zara, Zalando and H&M in major cities like Warsaw will certainly add more pressure to the retail group.

As a result of the increased foreign competition, it's more important to focus on businesses with more substantial competitive advantages and operations that can be more resilient to foreign competition. One of these businesses in Poland we admire due to its technical barriers to entry is Dino Polska, a fast-growing Polish grocery retailer. With the Russian-Ukraine war also taking a toll on the Polish consumer spending budget, looking at food retailers like Dino will also provide a less risky exposure into the Polish consumer industry than discretionary consumer companies.

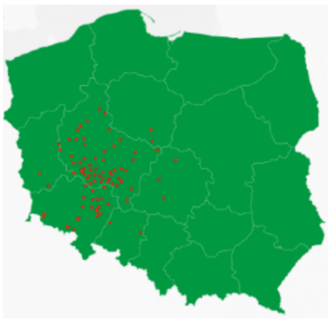
Dino Polska - Grocery retail

Growth-oriented consumer investors have been more focused on e-commerce and online grocery retail when looking for investment opportunities, but who would think the fastest-growing publicly listed retailer today would have no single e-commerce operation. Dino Polska has utilised an unconventional path to delivering growth and value for its customers and shareholders. 24 years ago, its founder, Tomasz Biernacki, who is still yet to share a public interview, had attempted various unsuccessful retail ventures and after a joint venture with a private equity firm, he launched Dino to bring grocery retail to communities in Poland with smaller grocery store penetration.

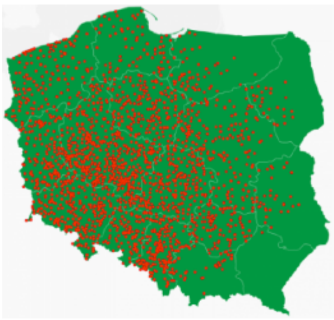
Many factors make Dino unique, but for this briefing, we'll focus on two key areas: store location and the Dino meat counters.

1. Store location: While most grocery retailers focused on big cities like Warsaw in Poland, Dino initially focused on small but densely populated villages in western Poland. These regions were unattractive for hypermarket and supermarket peers like Carrefour and SPAR due to the economics and population, while discounters like Lidl and Biedronka operated too little stock keeping units (SKUs) per store to maintain EBITDA targets in these regions. Dino's store format and location matched the customers it wanted to serve. Management acquired land priced much cheaper (1.6 million zloty versus 80 million in big cities). The concentration in Western Poland also made distribution much more efficient than attempting to grow around the country from day one. This focus has also saved Dino on operational costs like marketing. In 2017, marketing was just 0.2% of sales.

2. Meat counter and operations: Before Dino, peers like Lidl and Biedronka had tested operating meat counters in Poland but struggled to manage them. For Dino, these difficult-to-operate meat counter operations were natural to its business model. Dino owns a meat processing plant, Agro-Rydzyna. Fresh meat is currently 16% of Dino's sales and owning its meat plant has allowed Dino to move with speed in its distribution.



2010 - 111 stores



2022 - 2156 stores

A Dino Store

Store location growth at Dino Polska by year. Dino has largely focused in western Poland

Growth

Over the past six years, Dino has more than tripled its store count and since 2010, its stores have grown at a compounded growth rate of 28%. Revenue growth hasn't just been driven by store growth, as there's also growth in like-for-like (LFL) sales. Although its LFL growth of 28.5% in 2022 was mainly due to the high food inflation in Poland, its improvement in its FMCG branded products and alcohol and cigarette sales also positively contributed to sales growth. Before the war, LFL sales growth averaged 12%, and its non-fresh grocery sales accounted for 50% of its revenue. Dino also owns seven distribution centres, each catering to 300 stores on average.

Competition - unit economics

Food retail is a competitive industry with many players, from established European brands like SPAR, Lidl, Aldi and Biedronka (the market leader with 3,280+ stores) to mom-and-pop stores, with the latter making up 65% of the Polish market.

In the table on your right, we break down Dino Polska's unit economics per store based on our estimates. Given Dino's focus on smaller communities, they can purchase land cheaper than peers and on average, it costs them 2.4 million zloty to build its 400 square metres store with 10-30 car parking spaces. Its stores operate from 7-10:30 pm Monday - Saturday and have up to 5,000 SKUs.

Within 6-7 months of purchasing the land, Dino can complete the construction of its store format, and within three months of operations, monthly sales will reach PLN 0.35 million and 0.57 million by the end of its third year.

	Dino Polska (PLN m)
Average revenue year 1	4.56
Average revenue year 3	6.84
Revenue per store	9.18
Initial costs	
Land	1.60
Fit-on costs	0.80
Ongoing costs	
Cost of sales	6.03
Employee wages	1.0
Energy and materials	0.81
Other	0.63
Adj operational profit	0.71
Adj. operational margin	**7.73%**

Dino Polska's per store economics (annual reports and Jenga's calculations)

Dino handles its logistics network and its growing economics of scale allows it to purchase goods at favourable terms. Energy has also been an area of focus, given the war's impact on energy costs and management has now responded by upgrading 78% of all stores with PV panels.

Its well-managed unit economics allows Dino to maintain better profit margins than its peers. Its after-tax profit margins have averaged 5.8% over the past five years, double global peers like Walmart (2.2%), Costco (2.4%) and Carrefour (1.4%).

There are two main issues and risks with Dino Polska. Firstly, there are only so many stores a country can manage, and Dino's unit economics ceiling will likely be around 3,200-3,300, 50% above current levels. Above here, Dino will have to sacrifice margins to add additional stores. Secondly, investors today have to pay 33x in 2022 earnings or 25x its projected 2023 earnings. This could fetch a 65% return (14% IRR) over the next four years at fair value, slightly below Jenga's target investment hurdle rate.

Information Technology

Poland has developed its expertise and global positioning within information technology. Over the past few years, major multinational companies like Microsoft and Netflix announced new engineering and data hubs in Poland. As of 2021, Poland (136) had the fifth-highest number of data centres in Europe, surpassing more populous countries like Italy (131) and Spain (125).

An estimated 401,000 software developers are present in Poland, 1% of its population and an additional 75,000 ICT students. The pace and scale at which Poland has developed its expertise across all facets of information technology have been quite outstanding. Unsurprisingly, sectors like information technology and communication services are overweighted in Polish equities compared to the global average. From an investment lens, we view its services and software sub-industries as more attractive within information technology.

Services

Poland has quickly become one of the most important countries for outsourcing and IT services worldwide. They're frequently mentioned among the top 10 countries for IT services and have gained higher positions across these rankings rapidly. Many factors have contributed to Poland's competitiveness here. Firstly, Poland's educational system performs well in critical subjects like programming, sciences and maths. According to the HackerRank study, Poland was the third best country in the world in programming, with a key expertise in Java.

Secondly, since most IT customers come from English-speaking countries, English proficiency plays a key but declining role for customers when selecting Business Process Outsourcing (BPO) partners. Around 50% of Poles speak English as a second language. Finally, Poland's low (but rising) labour costs relative to developed economies makes its market an attractive region to outsource to.

With the IT services industry expected to grow by 9% CAGR over the next four years, we wouldn't be surprised to see more service providers go public. One recent listing we are particularly excited about is Spyrosoft which was listed among the Financial Times fastest growing companies in 2021 and 2022.

Software

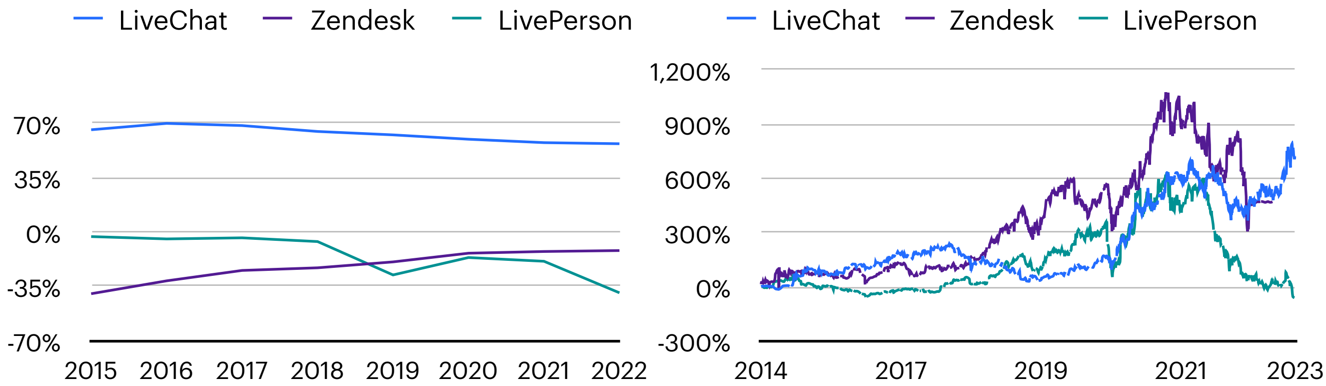
Relative to the US market, the Polish software market is quite small. Polish software revenue is projected to reach $2.1 billion in 2023, less than 1% of the US market ($338 billion). As a result of its small size, most Polish software companies look beyond Poland for potential customers and build products that can be globally competitive, particularly in key markets like the US and Germany. A Polish software company we particularly admire is LiveChat Software and we explore why they have done exceptionally well in the global chatbot industry.

LiveChat Software S.A. - Global ambitions

Most software startups target the rule of 40, a principle that a software company's combined growth rate and profit margin should exceed 40%. Among the 410 US-listed IT software companies, only 5.1% (20 companies) achieved this in 2022. LiveChat reached 86%, more than doubling the aspirations of many companies.

The path to achieving such astonishing financials at LiveChat is similar to other Polish software and IT companies. Venture capital funding until recent years was unavailable and entrepreneurs had to rely more on loans from family and retained earnings for growth. American payment platforms that supported software subscription pricing models had paused growth plans in Europe after the financial crisis, making managing subscription billings for startups like LiveChat more challenging. Potential customers for Chatbot apps offered by companies like LiveChat had also scaled IT budgets aggressively during the financial crisis, further impacting revenue growth potential.

There's a clear difference in economics between software companies founded pre-financial crisis and the VC boom from those founded after them. Management at LiveChat directly credits this as a key reason it outperformed its US peers like Zendesk and LivePerson in key metrics.



Charts: LiveChat's EBIT margins (left) and share price performance (right) relative to LivePerson and Zendesk. Zendesk went private in 2022 (S&P Capital IQ)

Culture as a moat

In certain industries, creating technical barriers to entry is quite tricky due to the lack of factors like network effects; it costs $0 for a customer to switch chatbot providers. In situations like this, the people behind the company matter even more. The culture at LiveChat separates them from competitors and is why they achieve such astounding economics in an industry plagued with unprofitable businesses. Today, LiveChat services more than 37,000 paying customers across its five software solutions; LiveChat, ChatBot, HelpDesk, KnowledgeBase and OpenWidget.

In 2022, LiveChat achieved an after-tax profit margin of 53% while growing its revenue by 38%. Meanwhile, its listed rival, LivePerson, earned a loss margin of 44%, with revenue growing by only 9%. LiveChat was also debt-free compared to LivePerson's 91% debt/capital ratio. From a management lens, there's a stark contrast between LiveChat and its peers like LivePerson for two main reasons, its management discipline and adaptability.

Discipline

Despite building a tool to support sales teams, LiveChat actually never created its own sales team until late 2019 and had already scaled to more than 20,000 customers by then. LiveChat's management initially focused on smaller enterprise clients and their customer study showed that these clients responded much better to inbound marketing than from a sales force and thus doubled down on its marketing strategy. Many peers followed the industry norm and employed large sales teams and, as a result, created much more bloated cost structures than LiveChat.

Another example of discipline for LiveChat is its freemium strategy. In recent years, the Live chat market has been flooded with VC-funded freemium players, which initially charge customers nothing, intending to upgrade customers to the paid version later. LiveChat's management has often voiced the problems of this model on revenue and margins despite the industry shift to freemium.

> *"A substantial part of suppliers offers their solutions in the freemium model. In the assessment of the Management Board of LiveChat Software, the monetization of clients who started to use free services is a very difficult and ineffective process."*
>
> *- LiveChat's H1 2022 semi annual report*

Adaptability

Given the pace of innovation and technological advancement's impact on communication, the live chat industry has to react rapidly to defend its business model. For LiveChat, this has happened twice in more recent years;

Facebook Messenger: LiveChat's shares declined by -55% between 2017 and 2018 when Facebook Messenger rolled out its chatbot platform to support businesses which seemed in competition with LiveChat's offerings. The rollout by Facebook significantly changed the dynamics in the live chat market. Unknown to investors then, LiveChat was among the few companies Facebook developed their solutions with and by the end of the year, LiveChat had already launched its BotEngine to tailor its services for the new industry dynamics and quickly integrated its existing LiveChat, chat.io with Facebook Messenger. For peers who failed to adapt, Facebook Messenger eroded their business economics, whereas, for LiveChat, it unlocked even growth opportunities.

OpenAI: A more recent example of LiveChat's ability to adapt to new paradigms is with OpenAI's artificial intelligence offerings. While it's still slightly unclear to what extent OpenAI's ChatGPT will impact the live chat industry, LiveChat's management, as of February 2023, had already announced it had signed a Data Processing Agreement (DPA) with OpenAI and will introduce its functionalities across its portfolio of products.

LiveChat's management is an example of the management team mindset we like to see in these "low moat, high innovation" industries. At 24x 2022 earnings or 21x 2023 earnings with the earnings growth potential of 24% CAGR over the next three years, we believe LiveChat still has the needed margin of safety we seek in growth investments.

Video gaming - A growing export market

The Polish gaming market has come far from the days of "bootleg and localise" in the early 1990s. Gaming quickly grew as the Polish economy opened up, but access to new games remained challenging for many years. Western gamers could access new releases in game stores within a day of release, but this could take up to five weeks in Poland. Until 1997, pirated copies of video games were legal in Poland and hardcore gamers turned entrepreneurs such as the founders of listed companies like CD Projekt, PlayWay and 11 bit Studios saw this gap and spent their initial years selling these unlicensed games. Adrian Chmielarz, the founder of Metropolis Software, one of the initial pioneers of gaming in Poland, would travel 40 miles daily to sell these games for a profit.

Industry Profile - Metropolis Software

•Metropolis Software was among the first gaming companies in Poland, founded in 1992 by school friends, Adrian Chmielarz and Grzegorz Miechowski.
•By 1998, Metropolis Software had big hits such as the Mystery of the Statuette, Teenagent and the Prince and the Coward with each winning global awards.

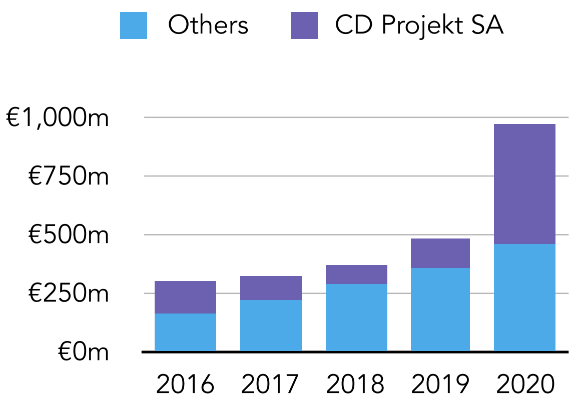
- Conflict between its co-founders pushed many key people out of the company and the developer was sold to CD Projekt in 2008.
- In 2010, former employees of the studio formed 11 bit studios which is currently Poland's third largest gaming company.

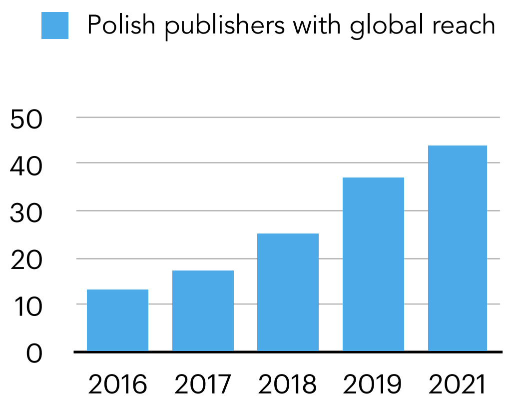
Today, the Polish gaming market looks very different and much more developed than the early 1990s. The scale of this development is quite striking. Poland is the world's third largest exporter of video games, only behind China and Japan. One in ten listed Polish companies are gaming companies, and a quarter of all globally listed game developers and studios are Polish.

"A quarter of all globally listed game developers and studios are Polish."

While researching, industry experts often point to the strong mathematics focus in the Polish educational system as a key reason for its success in game development which requires geometry in designing and strong quantitative and analytical skills during the game development phase. Today, universities in Poland offer over 70+ games-related education courses, with nearly half focused on programming.

Due to the nature of the global gaming industry, most of Poland's production goes to export markets (96% of revenue) led by its largest listed company, CD Projekt SA. This provides a natural currency hedge in years like 2022 when the Polish zloty depreciated against the US dollar.





Charts: (Left) Export revenue split between CD Projekt and the rest of Poland's gaming sector. (Right) Global game publishers originating from Poland

The gaming industry challenge

The increase in leisure as a percentage of time spent and the advancing technological capabilities within games will drive the industry's revenue over the next few years. The difficulty for investors isn't in understanding the broader industry opportunities but in finding long-term investments. Despite the industry's profitability, among the 109 listed gaming companies ten years ago, only 32% (35 companies) returned more than 10% per year, while 38% (41 companies) are valued less than they were ten years ago.

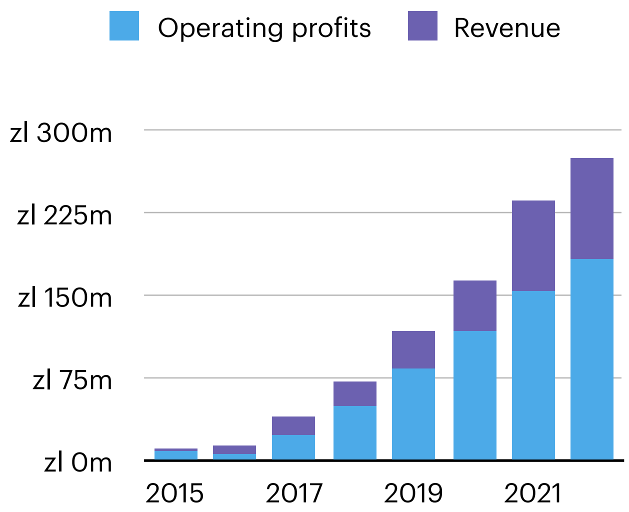
Gaming companies face three key operational challenges; game revenue lumpiness, exposure to the advertising cycle and player fatigue. We don't have to look too far from Poland's largest companies to see these issues in real examples. CD Projekt provides a good example of the industry's lumpiness. Triple AAA studios (studios focused on games with large budgets) typically receive most of their projected revenue within the first two months and can suffer if their games don't meet expectations. Since CD Projekt's Cyberpunk 2077 game failures, its shares have declined by -74%

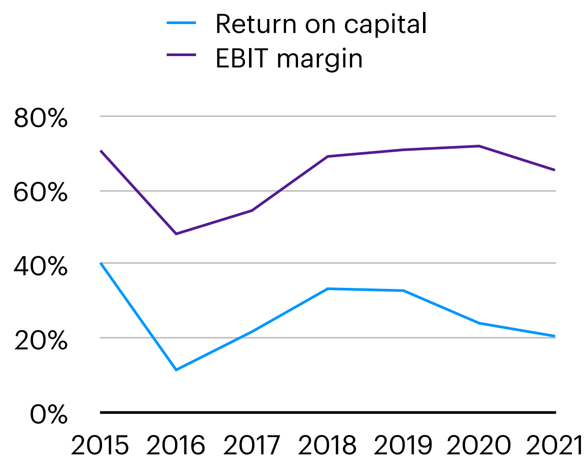
Ten Square Games, Poland's fourth largest gaming company, relies on in-app purchases and advertising revenue like all free-to-play mobile games. While this worked initially, player fatigue and the downturn in consumer spending and advertising budgets have significantly impacted the economics of its flagship games. Like CD Projekt, Ten Square Games has experienced a sharp drawdown since the pandemic highs (-82.6%), and annual earnings have fallen to below 2019 levels.

These issues make finding great long term investments in the gaming industry very challenging and investors are much better off holding a portfolio of various listed studios. One Polish-listed company that gives us exposure to just this is PlayWay.

PlayWay - An unconventional approach to gaming

PlayWay is the gaming company industry insiders love to hate due to its model. They are currently the second-largest gaming company in Poland by market capitalisation. The group was founded by its current CEO, Krzysztof Kostowski, in 2011, who had been in the gaming industry since 1991, just as the Polish economy opened up.





Charts: PlayWay has consistently earned high margins (right) and grown earnings y-o-y (left) driven by the PlayWay model explained below (S&P Capital IQ)

The PlayWay model

The PlayWay model relies on three key pillars:

- Game trailer before development
- PC premium simulation game focus
- Invest, support and self-publish

On the gaming distribution platform, Steam, you're likely to see games by PlayWay toping its user's wish list charts thanks to its hundreds of games on the upcoming releases list. This isn't necessarily due to how high quality its games are, but rather, due to the volume of games developed and published by PlayWay and its model of "trailer before development". PlayWay's management realised an additional way to save development costs was to create trailers of its game ideas and use the data and feedback from fans as a critical data point for deciding which projects move into development and publishing. It's an industry standard to do the reverse and as a result, many studios run into financial difficulties in situations the game doesn't live up to studio estimates.

PlayWay has successfully utilised this model across all its teams and has saved unnecessary costs, thus boosting profit margins. Secondly, PlayWay has predominately focused on premium PC simulation games with a unique angle based on real-life activities. These games are simulations of things one might do daily or would love to do and, as a result, reduces the costs needed to build a fan base. A successful example of this is its flagship game, Car Mechanic Simulator, where players take the role of a car mechanic at a garage.

The final factor contributing to PlayWay's success is its willingness to invest and support smaller studios. PlayWay directly holds shares in over 50 companies and is responsible for developing over 100 games. It owns significant stakes in 26 other listed companies, with its largest stake being its 55% position in Big Cheese Studio, the developer behind the Cooking Simulator. PlayWay's founder often recalls how difficult it was to raise interest from gaming publishers for their first game ideas and how its big hit, Car Mechanic Simulator, lured the group to the self-publish model with minimal reliance on external funding and promotional support. The initial difficulty has been a blessing in disguise.

These three factors have played a pivotal role in PlayWay's growth. Revenue and operating earnings have compounded by 56% and 67% per year over the past five years, while EBIT margins have consistently been above 45% since 2015. PlayWay's management seems very focused on this strategy and 2023 has started well with new hits such as SimRail, Contraband Police and WW2 Rebuilder performing well. PlayWay is slowly moving up the quality ladder with an increasing focus on its gaming graphics and gamer experience.

While its 19x current P/E ratio is slightly above its peer group, its diversified growth strategy is likely to grow earnings over the long term and we wouldn't be surprised to see PlayWay double its size within four years.

Industrials - An Industrial market

Poland has experienced a sharp rise in its industrial and manufacturing capacity and currently ranks as the fifth-largest manufacturing country in the EU. Similar to the broader economy, its industrial market benefitted from its economic liberalisation and decades of uninterrupted growth and development. From our assessment, sub-sectors like infrastructure, aerospace, automotive parts and building products particularly stand out from an economic output representation and proportion of workforce employed lens within industrials.

Three key areas of Global Industrial Competitiveness

- PVC Windows and doors: 16% of global exports of windows are from Poland, while 35% of all global exports in PVC windows and doors come from the country. As Europe's biggest window and door exporter, Poland is seen as a key market for many multinational firms like Aluplast and Veka.

- Automotive parts: Poland is the ninth largest exporter of automotive parts, with Germany being a key trade partner ($14 billion in 2021). Jenga shortlisted companies like **Auto Partner SA** are among the listed companies driving the sector as export revenue grew seven-fold over the past five years.

- Electric car batteries: Poland is the largest producer of electric car batteries and the fifth largest in the world and lithium-ion battery sales recently exceeded 2% of total Polish exports. In recent years, Global auto brands like Mercedes-Benz have expanded their electric battery plants in Poland.

The recent growth in Poland's industrial base has attracted foreign attention and investors in recent years. In private equity activity, Advent International had supported InPost's rapid expansion before its IPO in 2020. Jet Investment acquired industrial properties and the Polish engineering group, Rockfin last year. Over the past ten years, industrials was the second-best sector by number of M&A deals in Poland, and as a result of the large share of private market activity, coupled with the proportion of family-owned businesses, Poland's industrials public markets doesn't reflect the best of what industrials have to offer.

While industrials make up 22.7% of Polish equities, more than the 17.6% representation across global markets, there are only eight Polish industrials listed companies with a market capitalisation above $200 million, the largest being InPost, the logistics group with a market capitalisation of $4.84 billion. Investors seeking attractive exposure to Polish equities will have to be willing to accept the illiquidity risks of smaller and micro-cap companies, as 76% of all Polish industrial businesses have a market cap of less than $50 million.

Seven of these industrial companies are within the environmental services sub-segment, and we particularly like its largest listed player, Mo-Bruk, which we explore next.

Mo-Bruk - A leader in waste management

A Mo-Bruk plant in Poland (company website)

Mo-Bruk is one of the few success stories in Poland's waste management industry that goes back to the late 1980s. Its founder, Józef Mokrzycki, who has recently stepped back from the group, initially focused on producing tiles and window sills. As industrial wastes in Poland accelerated, given the economic development, he switched his focus to waste management, and in 1997, Mo-Bruk launched its first waste recovery plant in Niecew.

Since then, Mo-Bruk has steadily expanded and now serves its industrial clients in three main areas;

- Hazardous waste incineration (40% of revenue)
- Stabilisation and solidification of inorganic waste (32% of revenue)
- Production of alternative fuel (19% of revenue)

Mo-Bruk's investment opportunity is mainly due to its competitive moat, but to fully understand the scale of this, we must first consider the broader waste management dynamics in Poland and the EU.

The Waste Management Industry

Landfill

Poland is currently the sixth largest waste producer in the EU, and unlike its more developed peers, Poland still largely relies on landfill (42% of total waste) to manage its waste. In European countries like Sweden, Germany and the Netherlands, landfill is virtually nonexistent (less than 4%). The landfill issue with Poland is critical, given that the EU has established laws that limit landfilling to a maximum of 10% by 2035. As a result, the Polish government introduced a landfill tax (Marshal's fee) to discourage plants and businesses from utilising landfills for waste dumping. The Marshal's fee has climbed from PLN 74 in 2016 to PLN 270 in 2021, and an increase in this fee increases the demand for alternatives like Mo-Bruk's incineration processes. This fee increase supported Mo-Bruk's 31% compounded revenue growth over the past five years and we expect to see more moderate growth in the future.

Non-municipal waste

Poland has an estimated 128 million tonnes of annual waste, with a 90/10 split between non-municipal and municipal waste, respectively. Non-municipal waste is quite broad and although Mo-Bruk is diversified, its addressable market within non-municipal waste is small. Waste generated from the flotation enrichment on non-ferrous metal ores and during cleaning represents almost half of the industrial waste market, and for Mo-Bruk, both markets aren't financially attractive given their presence in internal plant landfills. Mo-Bruk focuses mainly on hazardous waste that plants can't be deposited in the environment without prior treatment, which amounts to 2 million tonnes per year in Poland. Within the hazardous waste incineration, Mo-Bruk has a 35,000 tonnes annual capacity (65% utilisation rates in 2022) of the 100,000 current capacity in Poland, 35% of the country's incineration capacity. Another key sub-segment for Mo-Bruk is the solidification and stabilisation of waste, where it converts wastes into cement aggregates that can be used in building roads from two plants in Niecew and Skarbimierz.

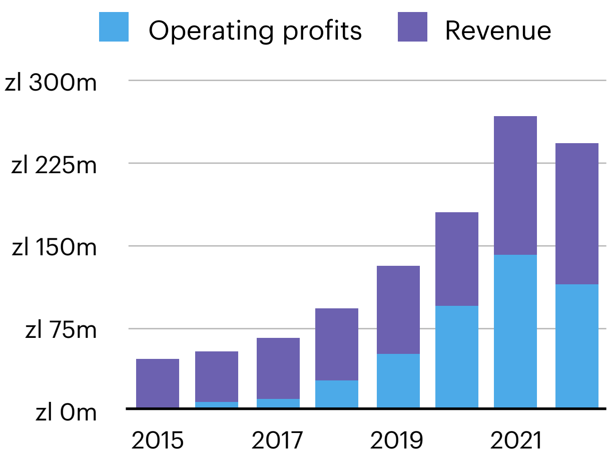
You might already have noticed that the waste management industry is filled with technical jargon and has a broad scope regarding waste products and processes. The industry jargon reflects the complexity of operating in the waste management industry, which has translated into competitive moats.

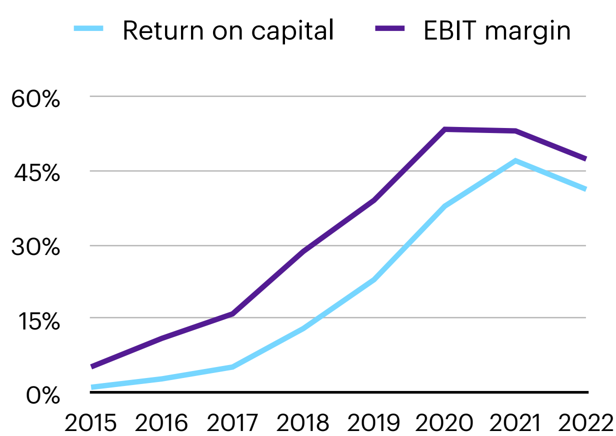
High barriers to entry

Given how critical waste management and the circular economy have become a priority in the EU, one might wonder why there aren't several new players entering the market to take advantage of the new laws supporting the industry. The answer is two-fold, the stakeholder dilemma and time to market. Waste management requires many stakeholders, from suppliers and customers to the government and communities. Most times, these stakeholders have conflicting goals. Governments want as many waste management operations to remove environmental hazards, but communities prefer these plants as far away from them as possible.

As a result, getting permits to construct and manage waste plants remains challenging even for incumbents. Mo-Bruk has seen its fair share of these difficulties. More recently, when Mo-Bruk attempted to increase its capacity within its Niecew plant, nearby residents understandably protested against it, causing a slowdown in operations. This, coupled with the preference for customers to partner with well-established players like Mo-Bruk, who have over 30+ years of experience, means new players often have to acquire a competitor to enter the Polish market rather than building from scratch.

Mo-Bruk's main competitors are mainly either peers like Remondis, who are also Mo-Bruk's top clients or companies like Eco ABC and Suez Polska, which are both subsidiaries of larger businesses involved in different areas within the industrials value chain. While the waste management market is fragmented, the close relationship among the existing players makes entering the market challenging for new players, further strengthening the barriers to entry.





Charts: Mo-Bruk's revenue and operating profits have grown rapidly in previous years (left) due to the increased Landfill tax, which positively impacts how much Mo-Bruk can charge customers. These fees are cyclical and we expect prices to fall slightly in coming years (S&P Capital IQ)

These, alongside the technical know-how, initial fixed costs requirements, patents and processing technologies, are key reasons supporting Mo-Bruk's relatively high EBIT margins (46% in 2022), debt-free balance sheet and strong balance sheet with cash 44% of its total asset value. As we advance, the critical question is where does Mo-Bruk grow going forward:

- Plant utilisation: Its RDF plant remains massively underutilised, with the potential for capacity expansion as Mo-Bruk seeks to diversify beyond cement producers. Thermal power plants are expected to be a focus area here. Mo-Bruk has also planned additional capacity in its solidification and stabilisation plants in Niecew and Skarbimierz of up to a 110,000 tonnes per year increase.

- Acquisitions: Given its reasonably healthy balance sheet, we wouldn't be surprised to see non-dilutive acquisitions in the future. Management has screened 129 companies, mainly in Poland, with 10 of them shortlisted among its target M&A list. These companies include businesses in the upstream segment of its value chain and other players in the hazardous waste incineration market.

We expect both factors to make up for the anticipated price decrease across the industry. With an 8% dividend yield and 10x P/E ratio on current earnings, Mo-Bruk doesn't have to grow profits by much to achieve good returns for shareholders going forward.

Concluding thoughts

Our tone in the Polish briefing has been fairly optimistic, given our conviction in the various segments of Polish equities we see global competitiveness coupled with strong management teams and attractive valuations. It will only be appropriate to conclude the briefing on the critical risks across the investment cases.

1. The economy/stock market dilemma: Despite the optimism for the Polish economy, we have avoided discussing the investment case for the broader Warsaw stock exchange and solely focused on five companies we believe are fairly attractive. A strong economy and improving industry dynamics doesn't necessarily trickle into a good stock market performance, and the gaming industry provides a good lesson on this risk. Although the Polish gaming industry has experienced rapid growth in recent years, the WIG Games Index has returned only 7% since 2019, driven by sentiment and underperformance of some of the largest companies. Despite the broader Polish economy performing relatively well over the past decade, the stock market has declined by -3.86% per year during the same period. As stock pickers, we need to be mindful of pushing the macro tailwinds into stock performance, especially in countries like Poland, where it's common for companies within the same industry to experience very different business drivers.

2. Management team transition: One of our core pillars when searching for investments is in companies with owner-oriented management. Our assessment of LiveChat portrays the difference an owner-oriented management team can have on the business prospects and company economics regardless of its industry. One risk with our investment picks is that all five companies were founded over the past three decades and are still under their first generation of owners. While this has worked out well, there's no guarantee their "secret sauce" can be passed down to new owners or and an example of a situation we are closely monitoring is with Mo-Bruk. Its founder, Józef Mokrzycki, left the management team in the past year, which coincided with its first revenue slowdown in recent years. While macro forces have certainly played a role here, the transition in management could have played a larger role in its slowdown and failing to see and admit this as investors can cost us.

3. Illiquidity: Many larger institutions would have missed out on these businesses due to how small the market capitalisation are. An institution managing $1 billion worth of assets can purchase all of the stock float in PlayWay by 20 times! The illiquidity makes exiting these investments much more difficult. For larger funds, Polish companies, on average, are not as feasible as investment targets today, given that less than 20 companies on the WSE have a market capitalisation bigger than $2 billion.

4. Economic shocks: We've experienced several economic shocks over the past three years, from the pandemic to the inflationary pressures in economies like Poland. While all five companies have coped well during these difficult years, e.g. Spyrosoft tripled its revenue and earnings in the past three years, it's still unclear how these companies might cope with emerging risks and future shocks. For example, Mo-Bruk's growth plans into CEE countries beyond Poland will be susceptible to further intensity in the Russia-Ukraine war. Should inflation persist in Poland, grocery retailers like Dino Polska will likely be pressured to cut prices on essential items to support households, impacting their profitability.

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- The inhabitants of Niecwia are afraid of toxic waste

https://nowysacz.naszemiasto.pl/mieszkancy-niecwi-obawiaja-sie-toksycznych-odpadow/ar/c1-7509853

- Poland has the fastest growing waste disposal fees for second year running

https://notesfrompoland.com/2021/01/12/poland-has-eus-fastest-growing-waste-disposal-fees-grow-for-second-year-running/

- Poland leads the European electric car battery market

https://tvpworld.com/59879522/poland-leads-the-european-electric-car-battery-market