

THE ROLE OF PENSION FUNDS IN FINANCING INFRASTRUCTURE PROJECTS -EXPERIENCES OF SOME COUNTRIES-

دور صناديق التقاعد في تمويل مشاريع البنية التحتية "تجارب بعض البلدان"

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Received: 18/03/2023;

Accepted: 13/06/2023;

Published: 30/06/2023;

Abstract:

This study aims to look at the financing of infrastructure projects with the contribution of pension funds, as well as the problems related to the financing of these projects, which are usually huge in terms of size and cost of implementation and are characterized by their strategic and social nature. Here, pension funds emerge to contribute to providing the necessary financial cover for this, as these funds are characterized by large financial surpluses and the timespan between their assets and infrastructure projects. The study touched on some experiences with regard to financing infrastructure through the contribution of pension funds and concluded that this model can be applied to many countries because these funds are global and available in most countries of the world.

Keywords: Infrastructure; Pension funds; Financial market; Investment.

Jel Classification Codes: O18; H55

ملخص:

تهدف هذه الدراسة إلى إلقاء الضوء على تمويل مشاريع البنية التحتية بمساهمة صناديق التقاعد، وكذا الإشكالات المتعلقة بتمويل هذه المشاريع، التي عادة تكون ضخمة من حيث الحجم وكلفة الإنجاز، وتتميز بطابعها الاستراتيجي والاجتماعي. وهنا تبرز صناديق التقاعد كوسيلة للمساهمة في توفير الغطاء المالي اللازم لذلك، باعتبار هذه الصناديق تتميز بفوائض مالية كبيرة، وتوافق المدي الزمني بين أصولها ومشاريع البنية التحتية. وتطرقت الدراسة إلى بعض التجارب فيما يخص تمويل البنى التحتية بواسطة مساهمة صناديق التقاعد، وقد خلصت إلى إمكانية تطبيق هذا النموذج على العديد من البلدان بسبب كون هذه الصناديق عالمية ومتوفرة في أغلب بلدان العالم.

الكلمات المفتاحية: البنية التحتية؛ صناديق التقاعد؛ السوق المالية؛ الاستثمار.

تصنيف جال: O18; H55.

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Introduction:

The demand for infrastructure services is steadily increasing each year, driven by global population growth, and evolving societal needs. These projects are unique in nature, prompting officials and decision-makers to devise innovative methods for sourcing the required funding, especially considering their substantial capital requirements, which have a significant impact on government expenditure. Infrastructure plays a pivotal role in societies, not only by providing essential public services but also by contributing to individual well-being and driving economic growth. Extensive studies and research have demonstrated the correlation between infrastructure, such as bridges, roads, airports, and other facilities, and enhanced economic mobility, as well as the positive tax implications on growth rates. However, these projects present cost-related challenges due to the extended period required for capital recovery and the complexities of pricing, owing to social considerations. To address these challenges, various innovative financing methods have emerged, including the involvement of non-state entities in funding and managing infrastructure projects. Notably, pension funds with substantial financial surpluses have played a pioneering role in providing the necessary funds for such projects.

Due to the specificity of infrastructure projects, their importance on the economic and social level, and the emergence of several studies and research that prove this proposition, as well as the distinction of these projects by the huge costs and the difficulty of finding mechanisms for pricing infrastructure services, many governments have resorted to activating the participation of several parties in the financing process by amending regulations And legal legislation in line with this trend, and in this context, the research raises the problem of the possibility of pension funds contributing through the significant financial surpluses that they enjoy, as they contribute in many countries to the economic movement, through their wide contribution to the financial market, and therefore the following problem can be raised:

What is the role of pension funds in financing infrastructure projects?

Research Hypotheses:

To achieve the research objectives, the following hypotheses can be formulated:

- Investment in infrastructure is pertinent to the nature of the asset portfolio of pension funds.
- Investment in infrastructure provides many benefits to pension funds.
- The Australian, Canadian, British, and Dutch experiences are pioneering examples in the field of infrastructure finance through pension funds.

Research importance:

The research is significant due to the strategic significance of infrastructure and the challenges it presents, particularly in terms of funding. One of the most crucial issues is securing financial resources and devising appropriate mechanisms. Governments face the dual challenge of delivering infrastructure services while ensuring sufficient funding for these projects, sometimes involving external stakeholders. Within this context, the public sector's involvement can be considered a viable solution, provided that the social aspects of these mechanisms are preserved.

Research Methodology and Tools:

To reach the goal of the study, the descriptive approach was used to determine the theoretical aspects of the study variables and to present the reality of the legal system, as well as the analytical method, to analyze the data of the study and to delve deeper into understanding and clarifying the components of the subject by analyzing them and drawing significant interpretations and conclusions on the other hand. As for data collection tools, a desk survey was relied on to identify books and studies related to the topic of research, in addition to research and studies published in periodicals or presented in the form of research papers in scientific forums, articles published on the Internet, and the websites of the competent official bodies in that matter.

literature review:

1- An English language study conducted by George Anderst, entitled “Pension Fund Investments in Infrastructure” in 2009, within the framework of studies issued by the Organization for Economic Cooperation and Development.

In this study, the author discusses the theoretical analysis of infrastructure assets and their risk premia. They suggest starting with the Capital-Asset-Pricing-Model (CAPM) to determine the risk premia for infrastructure assets. For primary infrastructure investments, the risk premia could include a credit premium, an illiquidity premium, a small-cap premium, and potentially other factors. This implies that the expected return and risk for such investments would fall somewhere between public and private equity. On the other hand, mature infrastructure services that offer high and stable dividends may have a risk-return profile similar to utility stocks, with a low stock market beta, or even corporate bonds.

The study suggests that investing in such assets also involves new types of investment vehicles and risks for managing pension funds - such as exposure to leverage, legal and ownership issues, and environmental risks as well as regulatory and political challenges - such caution may be warranted. However, certain steps can be taken, if governments wish to help infrastructure developers tap into potentially important sources of financing such as pension funds.

2- A study conducted by Ryan Chiang entitled “International Experience of Pension Funds’ Infrastructure Investment and Its Enlightenment to China” in 2018 within the framework of the Fifth International Conference on Public Administration,

The paper discusses the feasibility of investing China's pension fund in infrastructure construction and draws inspiration from the experience of infrastructure investment in Canada, Australia, Latin America, and other countries. The paper also analyses the risks associated with infrastructure investment, including financing, construction, operations, and supervision.

it examined the study of the experiences of Canada and Australia, and how China can benefit from these experiences, and the study concluded with a set of recommendations, including the necessity of regulating and improving the infrastructure market, accelerating the reform of the investment system, working to strengthen the public-private partnership model, as well as promoting financial innovation in order to better encourage the Pension Fund's investment in infrastructure.

I-The Theoretical Framework of Infrastructure:

Infrastructure refers to the physical and organizational structures that are necessary to support the functioning of a society or enterprise. It includes things like roads, bridges, airports, power grids, telecommunications networks, water and sewage systems, schools, hospitals, and government buildings.

I-1- Infrastructure definition:

Infrastructure is 'the basic physical and organizational structures needed for the operation of a society or enterprise' as per the Online Compact Oxford English Dictionary.

Another definition is more generic. Infrastructure is the network of assets 'where the system as a whole is intended to be maintained indefinitely at a specified standard of service by the continuing replacement and refurbishment of its components' (Association of Local Government Engineers New Zealand, 1998).

More recently in the USA, in response to the public policy discussion initiated as a result of the book *America in Ruins* the US National Research Council panel adopted the words both specific functional modes highways, streets, roads, and bridges; mass transit; airports and airways; water supply and water resources; wastewater management; solid-waste treatment and disposal;

electric power generation and transmission; telecommunications; and hazardous waste management - and the combined system these modal elements comprise' to explain the term 'public works infrastructure'. (Bhavesh, 2012)

Infrastructure encompasses the fundamental systems, facilities, and organizations that are essential for the functioning of a society, organization, or project. It consists of various physical structures, networks, and services that are necessary to support economic activities, promote social welfare, and facilitate different functions within a community or enterprise.

Overall, infrastructure plays a critical role in the functioning of modern societies, and investment in infrastructure is often seen as a key driver of economic growth and development. However, infrastructure can also be a costly and complex undertaking, requiring significant planning, funding, and coordination between different levels of government and private sector organizations.

I-2- Investing in Infrastructure: The Key to Economic Growth:

Investment in infrastructure is a key driver of economic growth in developing countries such as Pakistan, but the relationship between infrastructure and economic growth is complex and the impact of infrastructure investment on economic development is controversial. Earlier empirical studies of Pakistan on the relationship between infrastructure and economic growth had a narrow focus in terms of infrastructure measurements, and empirical results for the growth impact of infrastructure are less conclusive in the case of Pakistan. However, enhancing economic growth through strategic investment in infrastructure has been documented in the empirical literature for developing countries, with both public and private infrastructure investments having positive effects on economic growth. Investment in public infrastructure stimulates growth through private capital, which increases the marginal productivity of private inputs, thus increasing the rate of return on private capital and private investment (Javid, 2019). Finally, intensifying research and development (R&D) and information and communication technology (ICT) infrastructure are important drivers for sustained economic growth globally, with both R&D and ICT infrastructure development contributing to long-term economic growth in OECD countries.(Nair, Pradhan, & Arvin , 2020)

Infrastructure investments require significant upfront costs, and there may be competing priorities for limited resources. However, studies have shown that the benefits of infrastructure investments often outweigh the costs, particularly in the long term. Moreover, many infrastructure projects can be financed through a combination of public and private sources, making them more feasible and attractive to investors.

In conclusion, investing in infrastructure is a key driver of economic growth. By creating jobs, improving productivity and efficiency, and enhancing the quality of life, infrastructure investments can help to create a more prosperous and sustainable future for all.

II-Pension funds: The definition, mechanisms, and motives for contributing to infrastructure projects:

Pension funds are investment funds that are set up to provide retirement income to individuals. They are typically managed by financial institutions such as banks or investment firms and are funded through contributions from employers and employees.

II-1- Definition of pension funds:

The Organization for Economic Co-operation and Economic Development has defined pension funds as “a group of assets constituting a separate legal entity that is purchased with contributions to a pension plan for the exclusive purpose of financing pension system benefits. Members of the plan/fund have a statutory right, a benefit, or some other contractual claim against

the assets of the pension fund. The pension funds take the Form of either a special purpose entity with legal personality (such as a trust, corporation, or legal entity) or a legally separate fund without legal personality managed by a designated provider (pension fund management company) or other financial institution in the name of the plan/fund members.” Due to the large amount of money contained in pension funds, this distinguishes itself by the fact that most of them undertake many types of investments in various fields. They are investors in many companies listed on the stock exchange, as they contribute to providing financing for development.(OECD, Pension funds' assets, 2023)

II-2- Motives for pension funds' contribution in financing infrastructure projects:

Infrastructure projects, despite their risks, are considered appropriate for investing the financial surpluses of pension funds for the following factors :

- The long-term duration of the infrastructure project is well matched to the pension fund portfolio; Infrastructure tends to act as a natural, regulated monopoly or oligopoly, with reduced or non-market competition, resulting in a more stable portfolio of assets.
- Infrastructure project assets have low correlation with other financial asset classes that usually reflect changes in the economic cycle;(Alonso, Arellano, & Tuesta, 2015)
- Inflation protection: In order to stimulate investment in infrastructure projects, many governments resort to linking the value of the fees collected to benefit from the services provided with inflation rates, and this condition was essential in many financing agreements for infrastructure projects, due to the dangers caused by the long duration of the project due to the low The value of the local currency, which affects the incomes of companies investing in this sector; (Eicher, 2016)
- Both the state and pension funds will benefit from promoting further investment in infrastructure. Pension funds can further diversify assets, improve returns, cover liabilities, and reduce risks to economic activity. While the government can benefit from private funding in the future when public resources are limited.(Pontin , 2012)
- Stable Long-Term Returns: Pension funds typically have long-term liabilities that must be funded, such as retirement benefits. Infrastructure projects can provide long-term, stable returns that match the duration of pension liabilities. Pension funds are attracted to these types of investments because they offer a stable cash flow over the life of the investment.

Pension funds can benefit from investing in infrastructure projects by gaining exposure to long-term, stable returns, diversifying their portfolios, hedging against inflation, supporting social causes, and benefiting from government support.

II-3- Pension funds' assets:

Pension funds are investment funds that are set up to provide income to individuals during retirement. They are typically managed by professional investment managers who aim to maximize the returns on the assets held in the fund while minimizing risk.

The assets held by pension funds can vary greatly depending on the type of fund and its investment strategy. However, pension funds generally invest in a diversified portfolio of assets that can include stocks, bonds, real estate, and alternative investments such as private equity and hedge funds.

According to the latest available data from the OECD, the total assets held by pension funds globally was approximately \$48.5 trillion USD at the end of 2020. The largest pension fund in the

world is the Government Pension Investment Fund of Japan, with assets of over \$1.7 trillion USD. Other large pension funds include the California Public Employees' Retirement System (CalPERS) and the Canada Pension Plan Investment Board.(OECD, 2022)

with the potential to obtain USD 17 to 25 trillion by 2050 (World Bank estimates based on OECD data). Many developing countries are currently reforming and developing their pension systems to introduce funded pillars. If mandatory-funded pension systems are established, assets under management can grow rapidly and become a large percentage of GDP. Given the underdeveloped state of the capital markets in many countries, these growing assets will be seeking suitable investments, potentially including infrastructure. (Georg & Fiona, 2014)

It is important to note that pension funds are subject to various regulations and restrictions regarding the types of assets they can invest in, the amount of risk they can take on, and how they must manage their assets to ensure they can meet their obligations to pensioners.

II-4- Financial instruments for Investment in infrastructure:

The instruments can have either direct or indirect claims on the cash flows. In the case of direct claims, the instruments can be securities like general project bonds, securitization of specific cash flows, or shares of special purpose vehicles. In any case, to comply with these conditions, the securities would have to claim on special cash flows. For instance, they should have a senior claim on revenues, be based on projects with track records (Operation stage) or have some form of enhancement through the participation of the government, multilateral agencies, and/or political or credit insurance. The above-mentioned conditions can be further enhanced if the securities are based on indirect claims on the cash flows through some form of the investment pool. This would allow investment in the securities of several projects, over several sectors, and even over several countries. The resulting securities would already constitute a well-diversified portfolio and, as such, would be more liquid, less risky, and less volatile, and may even be rated. In all cases, the underlying projects must be well-structured and backed by solid sponsors. Even though this is the ideal, barely achievable in practice, it is the benchmark that those seeking pension fund financing should strive for.(Vives, 1999)

It is possible to invest in infrastructure projects in several ways, as shown below:

II-4-1- Infrastructure equity:

Investors in infrastructure equity, like investors in any other form of equity, are part owners of a corporation or vehicle. They rank junior to debt holders in the capital structure which means that debt holders have the first claim on the assets and cash flows generated by the company. equity may be Listed as infrastructure equities (a subset of global equity markets), or Unlisted equity investments in infrastructure projects via funds and external managers. can also be Direct investment/co-investment in specific infrastructure projects or companies.(OECD, 2015)

II-4-2-Infrastructure debt:

Infrastructure projects are normally financed predominantly by debt, which in the past has been provided mainly by the banking sector. In this category we can find:

- Infrastructure corporate bonds: Infrastructure corporate bonds are a small subset of the broader corporate bond market.
- Private infrastructure loans via funds with external managers
- Private infrastructure loans via direct lending or segregated accounts through an asset manager.

Within these categories, there are many different flavors of investment across the risk spectrum which can result in a diverse range of return profiles for investors. (Yong & Lamont, 2017)

Pension funds have several options for investing in infrastructure, ranging from direct investments to publicly traded companies and infrastructure debt. It's important for pension funds to carefully evaluate the risks and returns of each investment opportunity and consider the potential impact on their overall portfolio.

III -Case study:international experiences of the pension fund's contribution to financing infrastructure projects:

Pension funds in many countries have been interested in investing the financial surpluses available to them in the infrastructure sector due to the attractiveness of these projects and the positive aspects of these projects, and the global financial crises that have affected the world since 2008 made it necessary for many countries to follow this trend, and these have succeeded Countries are developing a large part of their infrastructure by involving this type of funds. The following are some experiences of leading countries in this field.

III -1- Australian experience:

Investment earnings. The most common type of defined contribution plan is a savings and savings plan. Under this type of plan, the employee contributes a predetermined portion of his earnings (usually before tax) to an individual account all, or part of which corresponds to the employer. (AustralianParliament, s.d.)

III -1-1 Investing in infrastructure by Australian pension funds:

Several Australian pension funds have a history of investing in infrastructure in Australia and abroad. Several Australian industry participants including Industry Funds Management, Victorian Funds Management Corporation, Motor Traders Association of Australia (MTAA) Superfund, AMP Capital Investors, and Hastings Fund Management are major infrastructure investors .

One of the most important factors for the success of Australian pension funds in financing infrastructure are:

- Increasing opportunities for private financing,
- Strong financial performance of infrastructure assets,
- Increasing recognition of the role of the investment class within portfolios held by some funds and a desire to better match liabilities with assets, (Infrastructure Partnerships Australia, 2017)

Infrastructure investment in Australia has been based on outsourcing of investment. Banks were the main financiers of these projects, but the financial crises forced Australia to abandon the old model and adopt the new Australian model. Australian pension funds invest in infrastructure mainly through infrastructure funds.

For example, IFM is a wholly owned investment management firm for pension funds, it was established in 1995 and manages infrastructure assets with a total value of over \$13 billion (as of June 2013), a small portion of its portfolio is invested in emerging markets.

IFM is the sole owner of Pacific Hydro, a renewable energy (hydro and wind) company in Australia, Brazil, and Chile that was delisted from the Australian Stock Exchange in 2005. Pacific Holdings' first investment in Chile dates to 2004, while its first investment in Brazil was in 2007. It has challenged the wind energy market in Brazil by building two of the country's first wind farms, including Vale dos Ventos, on the northeast coast. Pacific Holdings accounts for about 11 percent of the infrastructure portfolio of AustralianSuper, one of the country's largest pension funds, according to the annual report of large pension funds and public pension reserve funds issued by the Organization for Economic Co-operation and Development.(Georg & Fiona, 2014)

Australian pension funds have also been active in infrastructure investments in other countries, particularly in Asia and Europe. These investments are often made through partnerships with local investors or infrastructure funds.

Overall, infrastructure investments have become an increasingly important part of the investment strategies of Australian pension funds, as they seek to generate stable, long-term returns for their members.

III -2- Canadian experience:

Canadian pension funds are among the world's largest infrastructure investors. Some chests have been experimented with as far back as the late 1990s and early 2000s. The average asset allocation of about 5% to infrastructure is second only to Australia. (Inderst & Della Croce, 2013)

III -2-1 Investing in infrastructure by Canadian pension funds:

Canada's largest pension funds focus primarily on deals originating in North America and Western Europe but invest in some other regions if they provide stable regulatory, economic, and political environments. Canada Pension Funds have some notable deals such as Ontario Teachers' Pension Plan(OTTP), Ontario Municipal Employees Retirement System(OMERS), Canada Pension Plan Investment Board(CPPIB), and Alberta Investment Management Company(AIM Co). The Ontario Teachers' Pension Scheme was one of the first OECD pension funds to invest in unincorporated infrastructure in Latin America when it bought out two Chilean water companies. In 2007, the Ontario Teachers' Pension Plan also owns 50 percent of Grupo Saese, a Chilean electricity transmission and distribution company. The other half was bought by AIMCO, which operates public sector pension funds in Alberta. In 2010 AIMCO operated half of the Autopista Central, a toll-free Chilean route. In 2012, the Canadian Pension Plan Investment Board invested more than C\$1.1 billion in five major roads in Chile. In 2014, The Canada Pension Plan(CPP) acquired a 10 percent stake in Peru's largest natural gas pipeline operator. Canadian pension funds have also been courted to invest in Indian infrastructure projects. The Union Minister of Road Transport and Highways invited Canadian pension funds (such as Teachers Ontario) and financial institutions to participate in the National Highway Development Project (NHDP) in 2010. (Georg & Fiona, 2014)

Canadian pension fund investment in infrastructure has the following characteristics:

- It has been driven by the larger public pension funds with unusually high target allocations to infrastructure, in some cases in double-digits.
- Most of the capital is invested in overseas infrastructure.
- The preference for direct investments by pension funds. (Inderst & Della Croce, 2013)

These investments not only provide long-term returns for pension funds but also contribute to economic development and job creation in the regions where the infrastructure is built. Additionally, they can help to address infrastructure gaps and improve the quality of life for local communities.

Overall, Canadian pension funds are likely to continue to invest in infrastructure projects both domestically and abroad to diversify their portfolios and provide stable returns for their pensioners.

III -3- United Kingdom experience:

The UK's largest pension fund Universities Superannuation Scheme (USS) is expanding and varying its indirect and direct infrastructure assets. It is investing together with PGGM and Canada's OPTrust, 150 million euros of infrastructure debt in the form of convertible loans in Globalvia Inversiones, with a portfolio of 20 core infrastructure companies in 7 countries. It includes toll roads and airports in Mexico, Chile, and Costa Rica. (Georg & Fiona, 2014)

PGGM Infrastructure is an investment entity that manages funds for Dutch occupational pension funds, primarily the largest one being Dutch pension funds, Stichting Pensioenfondsen Zorg

enWelzijn (PFZW). With a track record starting from 2008, the team specializes in investing in the infrastructure market on behalf of its investors.(PGGM, s.d.)

According to a survey of the 10 largest pension funds in the UK it was found that all ten funds have substantial allocations to private firms, none of them pursued an investment strategy that included direct investments. Thus, direct investments do not appear to be an integral part of their investments in private firms. (Cumming, 2012)

III -4- Netherlands experience:

One of the major Dutch pension funds, (PFZW), invests in infrastructure via Responsible Investment in Infrastructure Infrastructure Fund, which was established in January 2010. The fund invests in unlisted infrastructure equity. PPGM, the asset manager wholly owned by PFZW, acts as the fund's General Partner and PFZW and other Dutch pension funds are the Limited Partners. The PGGM Infrastructure fund has more than EUR 1.25 billion in assets under management, of which about five percent is in emerging markets infrastructure funds managed by third parties (e.g., an India-specific infrastructure fund). The fund has a target for emerging markets infrastructure exposure of 25 percent by 2015. Among the new destinations for its investments, it is monitoring opportunities in China (via infrastructure funds launched by managers such as Macquarie). AlgemenePensioenGroep(APG) the largest Dutch pension fund, opened an office in Hong Kong in 2007 to expand its infrastructure and real-estate portfolios. (Georg & Fiona, 2014)

Conclusion:

Pension funds play a significant role in financing development projects due to their substantial financial assets and long-term nature. They are available in all countries, making them a reliable source of funding for infrastructure projects, especially considering the increasing demand for such services. Many countries have successfully utilized pension funds, benefiting from their moral and financial independence.

Notably, countries like Canada, Australia, the United Kingdom, and the Netherlands have effectively employed pension funds to finance infrastructure projects. These countries have attracted investments from some of the world's largest pension funds. While there are challenges associated with utilizing pension funds, their importance in funding infrastructure projects is expected to continue growing. This is particularly relevant as governments face difficulties in meeting the escalating demand for such projects.

Investing in Algeria can be challenging due to political and economic instability, as well as regulatory and legal barriers. However, Algeria has a large and diversified economy, with significant natural resources and potential for growth. The government has also implemented reforms to improve the business environment and attract foreign investment.

Pension funds may consider investing in Algeria through various channels, such as direct investment in companies or projects, investment in local stock markets, or investment in funds that specialize in Algerian assets. Before investing, pension funds should conduct thorough due diligence to assess the risks and potential returns of each investment opportunity.

Consequently, the study concluded the following results:

- The financial assets of pension funds are considered very suitable in the infrastructure, in terms of the size of these assets and the length of their term.
- Infrastructure investment provides many advantages in pension funds, as the time frame of these projects is compatible with the assets of pension funds. It also reduces some of the risks in other investments and provides the government with financial resources and good management of infrastructure projects.

- Pension funds in many countries have succeeded in contributing to the financing of many infrastructure projects. Australian, Canadian, Dutch, and British pension funds are among the most funded pension funds that have contributed to the financing of infrastructure projects.
- The financial market plays an important role in investing pension funds in infrastructure construction projects.

The study concluded with the following recommendations:

- Granting sufficient independence to pension funds from the legal and financial aspects.
- Setting appropriate laws for the contribution of sovereign funds to investment in infrastructure
- Reforming the financial and banking market and investment regulations.
- Granting the necessary support to investors, and reducing the risks related to investing in infrastructure.
- Setting the appropriate legal framework to encourage investment.

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