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Public-Private Partnerships in Slum Rehabilitation

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***Abstract*— Slum rehabilitation by ensuring availability of facilities and civic services is key to the human development of slum dwellers. The Dharavi slum in Mumbai, has been subject to several failed redevelopment plans. Meanwhile, São Paulo, a major city in Brazil, had a starkly different experience with their slum upgrading program, which was largely a government mandated project. In Mumbai, the government produces tenders to be auctioned to contractors who will take up the physical redevelopment. There is a need for policy which not only addresses the structural inefficiencies of Dharavi, but also the social factors which are resistant to the proposed rehabilitation.**

***Index Terms*— Development Economics, Public-Private Partnership, Slum Rehabilitation, Socioeconomic Objectives.**

I. Introduction

With the introduction of the United Nations Sustainable Development Goals in 2015, a "universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity," there has been action taken all over the world to alleviate poverty. Slums and informal settlements have been recognized as the centres for the urban poor, and since eradicating poverty and raising the quality of life are key goals, slum eradication seems to be an important step on the way to achieving these. Rehabilitation of slums will provide current slum dwellers better access to civic facilities and an elevated standard of living.

A. Relevance of Dharavi and São Paulo:

Dharavi:

In 2003-04, the Maharashtra government decided to redevelop Dharavi and created an action plan for the Dharavi Redevelopment scheme. The land was to be divided into sectors and developers were to be appointed, subsidising the cost of development. A Special Planning Authority was also appointed for planning and development.

However, in the 17 years since, INR 31.27 crore has been spent on various aspects of this rehabilitation scheme, specifically legal fees, business charges, advertising, and Product Management Consultant charges. Various governments in Maharashtra, including the NCP-Congress government and BJP-Shiv Sena coalition, had planned redevelopment of Dharavi on an 80%-private stake and 20%-government contribution model for the INR 20,000 crore project. However, no progressive work has been seen in the years that have passed.(Adimulam)

São Paulo:

The São Paulo Favelas had created a housing problem. These were slum-like areas where 800,000 of the city's 11 million inhabitants lived. To eradicate the issue, the Municipal Housing Secretariat started a slum upgrading program, Guarapiranga, in 2005 to alleviate poverty and increase the standard of living.

The program aimed to provide a better standard of living for those in informal settlements and slums by overcoming the problems of lack of infrastructure and availability of public services and social amenities. It also prompted the construction of new formal housing units for the slum population.

The São Paulo municipality tried to build upon the efforts of the people made in building their dwellings, and work on restoring the quality of living quarters in households as well as the quality of public spaces. They also focused on the integration of new neighbourhoods into the city("Case Study: São Paulo, Brazil - Urbanisation in LEDCs").

B. Geographical Importance:

Dharavi:

Dharavi is located in Mumbai, the financial capital of India. Dharavi lies between Mumbai's two main suburban railway lines on low-lying land, previously used as a garbage dump, and is one of the biggest squatter settlements in the world. The permanent settlements are towards the centre of Dharavi while the outskirts of the slum have many houses made from cardboard, wood, corrugated iron, plastic sheeting, or metal from oil drums (BBC). Located in central Mumbai, Dharavi provides an ideal location since it provides easy access to all parts of the city, while also having cheap housing. Hence, it is a centre for migrants to live after large-scale urbanisation in Maharashtra.

São Paulo:

Sao Paulo is located in the southeast, part of Brazil's most developed and populous areas. With an area of 248,209 square km, it is the largest city in Brazil, and also one of the largest urban centres in the world. Lying on a plateau in the Brazilian highlands, it is also one of the industrial centres of Latin America today. The nearby rivers provide ample hydroelectric power generation. Despite the comparisons that can be drawn to Dharavi, the São Paulo favelas are located on the city outskirts, hence not enjoying the same geographical accessibility. (Britannia)

C. Economic Importance:

Dharavi:

The activities occurring within Dharavi cannot be classified as a formal market. However, it has a number of thriving micro industries that produce high-quality leather, aluminium, and pottery goods. A large number of the population is

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self-employed, with over 5000 businesses operating in the region. (Merchant)

São Paulo:

São Paulo's favelas are home to a large majority of the working class of the service sector and are formed due to unequal wealth distribution. The favelas consist of mostly informal settlements with very few civic facilities available and hence are cheap areas to settle for the majority of the workforce. (Britannia)

D. Definitions:

Slums:

A slum is a residential area with substandard housing that is poorly serviced and/or overcrowded, and therefore unhealthy, unsafe, and socially undesirable (Harris).

UN-HABITAT defines a slum household as a group of individuals living under the same roof in an urban area who lack one or more of the following:

1. Durable housing of a permanent nature that protects against extreme climate conditions.
2. Sufficient living space which means not more than three people sharing the same room.
3. Easy access to safe water in sufficient amounts at an affordable price.
4. Access to adequate sanitation in the form of a private or public toilet shared by a reasonable number of people.
5. Security of tenure that prevents forced evictions.

Slum Rehabilitation:

The slum rehabilitation process is an institutional change that involves the shifting of an entire informal built environment to a formal housing structure (Nijman).

Also referred to as slum redevelopment, the process is aimed at improving welfare of citizens with access to basic civic services and allied social services(*Slums: Some Definitions*).

Slum Upgrading:

Slum upgrading is an integrated approach that aims to turn around downward trends in an area. These downward trends can be legal (land tenure), physical (infrastructure), social (crime or education, for example) or economic. (Cities Alliance)

Public-Private Partnership:

The PPP Knowledge Lab defines a PPP as "a long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance"(World Bank).

E. Time Frame:

The Dharavi slum rehabilitation scheme was proposed in 2004 and put into effect in 2005. The São Paulo favela development project was also started at the same time, resulting in a suitable comparison between the two projects in the middle part of the decade.

F. Research Question:

How effective is the public-private partnership method of development in the slum rehabilitation process using the São Paulo Favelas and Dharavi, Mumbai as a base for analysis?

II. Literature Review

A. Habib, E. (2009) explored the government policies in collaboration with NGOs in slum redevelopment in Bangladesh in his paper "The Role of Government and NGOs in Slum Development: The Case of Dhaka City", focusing on the different priorities of the NGOs and the government. This paper concluded that in-depth research into slum dwellers' problems is required to enable NGOs and governments to assist them in improving quality of life. It also proposes that the government set up a framework for the NGOs to provide the urban poor with housing, and build high-rises for the low income sections, so that they have access to affordable housing.

B. Lloyd-Sherlock, P. (1997) discussed the original appearance of favelas or shanty slums in Sao Paulo, giving reasons and analysing the economic impact on the urban development of the slum. The conclusion reached was that the government had neglected the opinions and choices of the favela dwellers, focusing instead on marketing itself from a political standpoint. The fall in real wages for the population of São Paulo had a negative impact, leading to increased slum inhabitation.

C. Sunil Kumar Karn, Shigeo Shikura, & Hideki Harada (2003) discussed the impacts of living in slum areas on the health of the lower-income population of Mumbai. They concluded that the effects of low literacy, income, and personal hygiene are significant on life expectancy and morbidity. For slum dwellers, the main concerns are about environmental factors and sanitation when it comes to their lifestyle and standard of living.

III. Research Methodology

This paper uses secondary data from several sources to compare the São Paulo slum upgrading program and the Dharavi Redevelopment Program.

Due to the pandemic situation, it is impossible to physically be present in the Dharavi slum to get responses to interview questions or collect primary data through research. Hence, secondary data has been used to contrast the conditions and effects of the PPP in Dharavi and São Paulo rehabilitation programs to investigate the causes of the prolonged failure of the SRD scheme in Dharavi and analyse more effective measures that could be implemented. The main sources used in this analysis include data from government sites and the World Bank documents, economic and social science journals, and newspaper and news website articles. There was also thorough content analysis of all secondary data studied by the author in the process of forming conclusions through this paper.

IV. Objectives

The main objectives for the research and analysis are:

A. To draw a comparison between the models of redevelopment strategies in São Paulo, Brazil, and Dharavi, Mumbai, India.

B. To analyse government efforts in Dharavi and evaluate

the success of individual measures.

C. To suggest a suitable economic model for the rehabilitation of Dharavi.

V. Case Study: São Paulo Favelas

A. Urbanization in São Paulo and Impact on Housing:

Sao Paulo is located in the Southeast of Brazil in South America. It is Brazil's financial capital. Due to this status, the city has been a centre for rural-urban migration through the 20th Century. Between 1950 and 2000, Brazil's urban population grew from 36% to 81% of the total population. The trend in urban migration reflects the impact of structural changes in Brazil's economy including industrialisation, agricultural automation, and the accompanying modifications of programs and policies of Brazil's changing governmental elite("São Paulo: A Growth Process Full of Contradictions").

B. Shortage in Housing:

As per trends seen in urbanisation in developing countries, the industrialisation in Brazil in the 1950s led to an extended period of rural-urban migration. The average household size in 1960 was 5.1 members (UN Department of Economic and Social Affairs). Due to declining fertility rates and death rates ("Brazil Death Rate 1950-2019")in the 1950s decade, it can be assumed that the majority of the population growth was from influx of immigrants. The population grew from 2,334,000 in 1950 to 3,970,000 in 1960. Given that the growth rate in Brazil was 2.99% in the 1950s decade("Sao Paulo, Brazil Metro Area Population 1950-2020"):

Projected Population in 1960:

$(102.99\%)^{10} \times 2{,}334{,}000 = 3{,}133{,}656.819 \cong 3{,}133{,}657$

Difference in population due to rural-urban migration:

3,970,000 - 3,133,657 = 836343 people

Therefore, increase in number of houses demanded:

$$= \frac{Change\ in\ population}{Average\ household\ size}$$

$$= \frac{836343}{5.1}$$

$$= 163989\ (Using\ assumptions\ above)$$

The supply-demand diagram below outlines the housing problem created by the sudden migration of the rural population to Sao Paulo:

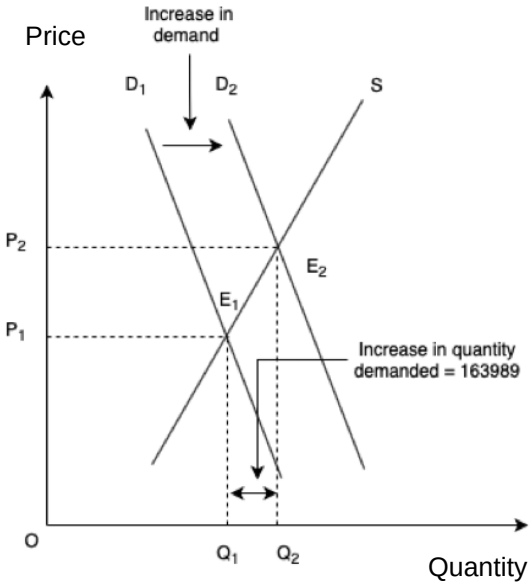

Figure 1: Market for Housing in São Paulo

The shortage in supply of houses leads to the proliferation of slums on inner-city land, known as favelas(Wagner and Ward).

As per the market diagram for housing in São Paulo, it is clear that a small increase in the quantity demanded led to a proportionally greater increase in the equilibrium price for houses, indicating a price inelasticity of demand. There is a clear correlation between the ability of a population to afford formal housing and the proliferation of informal and squatter settlements. There was a very small percentage of the new population which could afford to pay the high prices for housing("Brazilian Housing Crisis"). Of those who could, most lived on rental, and there was little to no purchasing of housing. Although in the early 1960s and 1970s, the mean wage of a São Paulo manual labourer was around 4.7 times the wage of a worker in the North-East (World Bank), the real income was significantly lower due to the higher prices of goods and services associated with living in a metropolitan area. This further reduced the affordability of housing for the population which had migrated from rural areas(Cavalcanti).

There were also a great deal of rental issues created by the landlords. As the demand for rental housing increased, there was a substantial rise in the prices of living in the more settled neighbourhoods, especially in the central regions of the metropolitan area. Due to the price inelasticity of demand, the burden of the government tax fell upon the consumer, while the producers (landlords) gained revenue by increasing prices and passing on the burden to the tenants(Carolini).

C. Market Failure as a Result of Favela Housing in São Paulo:

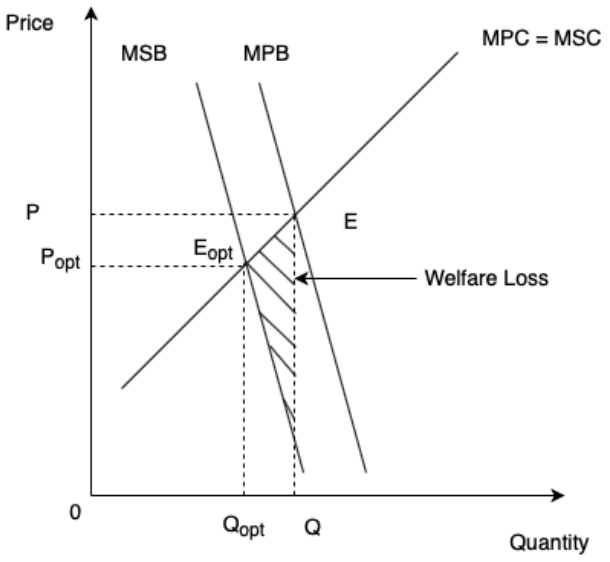

Figure 2:Market for Slum Housing in São Paulo

The diagram indicates that the marginal private benefit exceeds the marginal social benefit, which is why there is a market failure. There is massive overconsumption, since the socially efficient quantity is much lower than the quantity being consumed. The welfare loss triangle indicates the benefits to society lost by the

Favela Housing in São Paulo had resulted in major negative externalities. The effects on stakeholders arising from this market failure include(França):

1. Excessive expenditure in the public healthcare system by the government, and exceeding the capacity of the hospitals and medical facilities. Since the Brazilian healthcare system is free, the government would incur debt had they not raised the taxes.
2. The black market losses incurred by thegovernment:some of the services unavailable in the open market were sold illegitimately.
3. Significant loss of life associated with unsanitary living conditions and dangerously constructed structures.
4. Lower productivity for businesses and industries, since their labourers often fell ill.
5. Crime incidents: Slums are often associated with higher crime rates due to the general lack of law and order.

In the case of market failure, where there is severe overconsumption of a demerit good (in this case, favela houses), the external costs require certain government intervention to be eliminated. The socially efficient quantity is not zero, due to the affordability of housing and cheap facilities available in a slum environment("Basic Costs of Slum Upgrading in Brazil").

D. Government Initiatives

The São Paulo municipality implemented a housing policy in 2005 which prioritised the upgrading and titling of the slums. The Municipal Housing Secretariat designed an information system to track the various settlements including favelas , irregular subdivisions, and tenements. The objective was to provide a broader view of the housing situation and to analyse this data to strategically plan the housing arrangements .

Given the size of the housing problem in São Paulo, the slum upgrading programme has access to around R $820 million earmarked by the federal government , and R $400 million provided by the São Paulo state government , in addition to resources totalling around R$620 million made available by the municipality itself. The programme was projected to help 130,000 families (one-third of the slum inhabitants). Housing was constructed for the residents who were displaced from the slums in areas of geological risk. The major undertakings of this program were supported by social work programmes(Lloyd-Sherlock).

As per the former Municipal Social Housing Secretary of the City of São Paulo from 2005-12, Elisabete França , "We learned the importance of respecting the social and economic investments that the communities and residents had made over the years, of restructuring their physical space in a responsive and respectful manner, and of promoting the integration between the slum communities and the city around them through design in a sustainable and environmentally responsible manner."

The main objective of the government was to eliminate the welfare loss which was caused by the overconsumption of informal housing. Through the methods of direct provision of housing, relocation of dangerous slum areas, sanitation measures and public health infrastructure in the major metropolitan city, the government was successful in reducing the problem of slum proliferation by 2012.

E. Public-Private Partnership

In the São Paulo slum upgrading program, there was no explicit public-private partnership. Although the government engaged the private sector strategically into partnerships, these did not rely on financial incentives provided through the public financial resources. The Sao Paulo case study, therefore, is a model for government intervention in slum rehabilitation, without involving the private sector in the major operational decisions and responsibilities.

VI. Dharavi

A. Migration to Dharavi:

Dharavi is located in the financial capital of India: Mumbai, a coastal city in Maharashtra. In the 19th and 20th centuries, Mumbai was a major centre for rural-urban migration on the west coast of India since the industrialization during British rule in India led to large-scale urbanization. Most of the settlers in Mumbai came to Dharavi for the industries, including leather and pottery, that would require large amounts of skilled and unskilled manual labour.

B. Market Failure:

Although there was a demand for labour within Dharavi and demand for Dharavi's goods, the government made little effort to establish any infrastructure in or around Dharavi. The living quarters and small-scale factories grew unsystematically, without provision for sanitation, drains, safe drinking water, roads or other basic services. Besides, the

lack of waste disposal systems in the area resulted in extreme environmental pollution due to the tanneries and pottery industry.

C. Government Initiatives – PPP:

The Maharashtra State Government approved the Dharavi Redevelopment Project (DRP) designed by Mukesh Mehta, a non-resident Indian architect, in 2004. After the sanctioning of the DRP, the Dharavi Notified Area was created and a Slum Rehabilitation Authority was appointed as the official planning authority. The government also opened the DRP to tenders globally. Developers would rehouse Dharavi's residents in 300 square feet apartments built in high rise tower blocks, thus freeing up space for their own development projects. This was the main incentive provided under the PPP scheme for redevelopment. Under the government-led Dharavi Redevelopment Project, developers will provide the people living there – who can prove residency since 2000 – a new, 300 sq ft house for free("About DRP : Slum Rehabilitation Authority").

D. Major factors that led to the failure of PPP in Dharavi:

1) *Volatility of the real estate market in Dharavi:*Dharavi has a history of volatile prices in the market for housing and real estate. As a result, this has discouraged several private enterprises from investing time and money into development in this area. The uncertainty in Dharavi mostly stems from the employment status of the people as well as the availability of civic services at different times of the year. It is linked intrinsically to the high value of land and deeply entrenched communities of people who live there. Buying the land from residents would entail an extremely high cost as well. Besides, there were almost 100,000 informal settlements that were to be developed.

2) *Rejection by Residents:*While the tower block idea resolved the issue of hygiene and sanitation that previously plagued the slum, it has encountered major resistance from its residents. Residents feel that a tower structure destroys the community sentiment that has allowed Dharavi's micro-industries to thrive for so many years, and drastically increases the already alarming population density of the area. The livelihood of Dharavi's residents depends on the layout of the community and they were unwilling to give it up for better living conditions since it would detract from their ability to make a living (Alam and Matsuyuki, "Features Affecting Improved Housing Managerial Services of Slum Rehabilitation Scheme (SRS) Apartments in Mumbai, India").In 2006, 60,000 residents were provided free accommodation in high rise apartments, however, they sold these flats for high prices and moved out because they are accustomed to their homes being close to their areas of economic activity.

3) *Tendering process:* There were several repeats of the tendering process due to misallocation of land, boundaries not being clearly defined as well as the qualms of the Maharashtra State Government. The Advocate General recommended the process be repeated after the tender had been allotted to Dubai-based Seclink Technologies Corporation which was the highest bidder at ₹7,500 crore due to a 45-acre plot originally owned by the Railways being included as part of the project. This created an internal conflict which meant the tender had to be reissued as recently as 2020.

VII. Parameters for Comparison

Parameter	**Dharavi**	**São Paulo**
Time Period	The plan was formulated in 2004 and brought into effect in 2005. However, no real action has been taken in 15 years. Furthermore, the pandemic has made resource allocation to the project difficult.	The plan for slum upgrading was implemented in 2005 after planning began in 2004.
Regulatory Body	The Maharashtra Government appointed the Slum Rehabilitation Authority (SRA) as the Special Planning Authority for the DRP.	The São Paulo Municipal Housing Secretariat initiated the slum upgrading project in cooperation with the Cities Alliance.
Private Participation	The redevelopment was opened up to the major players in the development industry, with tenders issued to bidders	The Municipal Housing Secretariat changed their focus from slum eradication to upgrading and with the help of the Cities Alliance, used information from other cities.
Level of Investment	Over a period of 15 years, INR 31.27 crore was spent on the DRP.	An average of R$ 10,623.94 was spent per family (Ancona and Lareu).

VIII. Suggestive Model

This section will entail a description of economically viable processes to be carried out in Dharavi for sustainable upgrading as opposed to complete slum eradication, as per the guidelines used by the São Paulo Municipal Housing Secretariat(*Slum Upgrading Experiences of Six Cities*).

A. Meeting Social Goals:

Dharavi has a large population of low income residents, most

of whom share certain social priorities. Although Mumbai is highly developed, the slum has certain socio-economic issues(Carr). The implementation of the following measures is necessary:

1) *Family Planning and Contraception:*The average family size in Maharashtra is 4.7 people. While in most parts of Mumbai, Maharashtra's capital city, there is access to family planning methods, there needs to be investment into these programs in the slum area. Reducing family size will efficiently decrease the load on the overstretched civic facilities in Dharavi. Reinforcing these schemes with free contraception and incentives could positively impact the lives of citizens.

2) *Education:* Contrary to popular belief, a reduction of the number of schools combined with population control could lead to better quality of education in the Dharavi school by focusing on well-paid teachers and facilities in government schools. Provision of midday meals is an incentive that should be publicised and enforced.

3) *Representation:* The urban poor, especially slum dwellers, often fall trap to politicians and vote-mongering schemes in which false promises are made. Representation in legislation is a priority for those who wish to have government initiatives for the betterment of society within Dharavi (Alam and Matsuyuki, "Dwellers' Satisfaction on Slum Rehabilitation Scheme and Its Affecting Factors in Mumbai, India").

B. Structural Design Objectives:

The government would optimally provide formal housing to the residents of Dharavi at subsidized rates. However, for aforementioned reasons, the residents are not entirely receptive to this arrangement.

Past experiences have shown that the residents will reject high rise buildings and they will be inconvenient and unsafe. A viable solution would be to have low-rise, high density apartment buildings for the slum dwellers which are located closer to the workplaces. This would involve temporary relocation of part of the population during construction, to high rise apartments which are available only on lease, and not owned by the slum people, which will prevent them from selling the flats at higher prices and reverting to their informal housing.

There would also need to be safety guidelines implemented for the number of residents allowed to occupy a house in the new complexes. Additional infrastructural investment would be required to incorporate civic services in Dharavi, which would mean an additional inconvenience to the residents.

However, with implementation of land title deeds, the security of living tenure and protection from eviction could influence the current residents to allow for the redevelopment of the slums, in which the buildings may be unsafe and prone to structural issues.

IX. Conclusion and Discussion

From the research and data analysis conducted through the process of the research paper, it can be concluded that there is significant evidence to prove that there is a tangible risk of using private organizations for the rehabilitation of slums. These firms often act in self-interest and their main objectives differ largely from the goals of the government and individuals living in the slums. Slums are often viewed as areas for industrial development and land that can be profited upon, although it may not be the best socioeconomic outcome for the tenants. If not conducted with appropriate cooperation and inputs from unions representing the people it could create political rifts as well.

Meanwhile, a government scheme could result in substantial gain of welfare by elimination of inefficiencies in the process of outsourcing the redevelopment. A community-based approach which is conducted in cooperation with the representatives of the members of the, in comparison to PPP, could be highly effective in ensuring satisfaction while also meeting government objectives of promoting welfare, civic service provision and productivity. The Human Development Index could increase considerably as a result of increased life expectancy, GNI per capita and education levels in the slums.

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