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Construction without Real Estate Development

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1. YES! THE CONSTRUCTION INDUSTRY CAN REVIVE ECONOMIC GROWTH!

Real estate development in Pakistan suffers from a bad reputation, both in policy circles and in the public. Detractors frequently claim that investing in real estate is *unproductive* and should be discouraged. Officials often put forward unsubstantiated claims that the real estate business is riddled with illegal activity of all sorts. However, when one looks back at Pakistan's foray into real estate development activity from the date of Independence, we find that the state considered itself responsible for providing housing for the millions of refugees who came to Pakistan to become citizens of the newly minted country. From then on, successive regimes have taken or tried to take, some initiative to fulfil the promise to provide adequate housing for the poor masses.

During his tenure, former Prime Minister Imran Khan also promised to provide subsidised housing for the poor, numbering up to 5 million homes. His approach was slightly different as Mr. Khan made a point of recognising the importance of the construction industry as a participant in achieving the goal of providing subsidised housing to the masses. Another important aspect of his agenda was the recognition that the construction of high-rise buildings in big cities is an important part of urban development. However, city administrations did not immediately accept the former Prime Minister's vision and showed limited interest in accommodating the discomforts of construction upheaval, such as 'tower cranes' and other such machinery in their city's midst.[1]

Later, Mr. Khan introduced a stimulus package to shore up the economic upheaval caused by COVID-19's impact on the economy. This included a package for construction activity to lead the stimulus effort. The package recognised construction as an industry and gave it financial incentives. However, there was no mention of the real estate sector as one of the leaders in boosting productive market activity. In addition to urban development, the package focused on the Prime Minister's promise to provide subsidised housing for the poor, as promised in his election campaign.

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[1]One of the authors, Nadeem Ul Haque has been asking for the last 20 years, "where are the tower cranes in Pakistan". It is indeed surprising that there are no tower cranes in a developing economy of 210 million people with some of the largest cities in the world. That in itself is a huge comment on the state of city governance and regulation.

We have long argued that the construction industry is a leading predictor of economic growth and is a cornerstone for the development and improvement of human life and society. From birth to death, the human life cycle takes place within spaces designed and constructed to promote all aspects of society, from education to government, to recreation, and much more. The more advanced a civilisation, the more complex and specialised the construction activity will be. All through human history, from ancient civilisations to modern society, one sees evidence of amazing architectural achievements, proof that humans are builders and indeed, master constructors.

During his term, Mr. Khan emphasised that the construction industry is linked to many other industries. It is important to note that ultimately the construction industry provides fundamental support to the real estate market, with the final product being developed spaces. To only think of construction in connection with providing housing for the poor may not be enough for real estate activity to thrive and to drive the economy as envisaged in Haque and Nayab (2020), Haque (2017), and Framework of Economic Growth (FEG, 2011). This paper discusses in detail what actions could be taken to realise the authors' vision to make our cities engines of growth, by promoting high-value 'tower-crane' construction.

2. THE CURIOUS CASE OF CONSTRUCTION WITHOUT REAL ESTATE!

Between the changeover from the PMLN government to the PTI government, policy took a sharp downturn in real estate activity and transactions in the sector. Stringent documentation requirements paired with high taxes were enforced (*Dawn*, June 2, 2019). The result was a decline in real estate prices and a severe decrease in the number of transactions. This has created a situation where the liquidity in the economy remains frozen in real estate. The result is dampened economic activity with expected growth in real GDP falling to 2 percent with no growth in the per capita income.

Multiple master plans have been put forward in cities, seeking to develop a low-density, low-rise, elitist sprawl-based model that mimics the thoroughly criticised American suburbia, filled with cars and without any civil or commercial amenities whatsoever (see PIDE Policy Viewpoint No 2, 12, 13, and 16, and Haque 2015, 2017, and Haque & Nayab, 2020).

The construction package announced by the PTI government was received with a mix of appreciation and criticism. One question was whether it would lead to a boom in construction. A Twitter poll of about 500 respondents showed that 75 percent voted that there would be no boom. PIDE also held a webinar with several key participants in the construction industry, along with several keen analysts. Once again, there was skepticism. What could be the reason for this negative response to the package? This paper brings forth several factors which stimulate negative thinking and hinder progress in the construction sector.

3. HOUSING FOR THE POOR?

Although the construction package was portrayed as a philanthropic model, it did not adequately consider market conditions. People rightly asked about the demand. The question of demand is valid even today. Do we have an acute

shortage of houses with millions homeless? Were this true, one could ask where these homeless people spend their nights: is it on the roads? In public transit stations? In other public spaces? We do not see many people in that situation. It should be clear then, that shelter is available but that it is of poor quality, as, for example, in squatter settlements. Estimates from the Government of Pakistan statistics show that 47-50 percent of Pakistan's urban population lives in squatter settlements, also known as 'Katchi Abadies.' People working in cities return to their family residences in these fringe rural settlements. The crisis then is of housing quality, not quantity.

Demand for a commodity arises when there is the ability to pay for that commodity. Ownership of a house requires both wealth and the cash flow necessary to retain it. The poor in Pakistan have no money to buy a house. Thus, it is clear that the desire for ownership and wealth is there, but the means to buy a house is not. The conclusion, then, is that there is no demand on the part of the poor as demand implies both the willingness to buy and the means to pay.

Box 1. A Wish the Poor Would Disappear!

- Master plans for housing schemes, and industrial estates, are made without any space to house the poor who make up the labour required for lower tier jobs in the area. The commonly held belief is that the labour force will come in from neighbouring villages and return after completing their shift without accounting for commuting time and cost incurred by them.
- Courts have weighed in by ruling that all encroachments, defined as any deviation from a master plan made years or decades ago, must be eliminated, without giving heed to the change in population and demographics.
- At one point, the Supreme Court of Pakistan forbade evictions of slum dwellers in the country, requiring local governments to devise housing policies for the poor. Since there are no local governments, this has never been done.
- Meanwhile, do-gooders and donors want a debt-ridden and inefficient government to take on all the responsibilities of an advanced welfare state like Sweden, even though Pakistan's economy is not even in the early industrialisation phase yet.
- There are more than 4,000 registered "Katchi Abadis," housing approximately 9 million people. Various governments have regularised the "Katchi Abadis" in the past, and while improvement of slum areas remains on the agenda, it is only as housing for the poor, miles outside the city where there are no jobs.
- There are no rental accommodations available for the poor, as tenancy becomes a political issue.
- Every government wants to provide housing and handouts for the poor without the provision of jobs. This takes precedence over growth, employment, and social mobility.

Affordability does not mean that the government pays for the goods and the goods are then sold in the market below cost. In most developed countries, housing ownership among the poor is limited. Mostly the poor and transient working-class live in poor-quality rented accommodations.

The belief that government subsidies can enable the poor to become homeowners is a myth. If one supposes that the government can provide subsidised housing to the poor, or even free housing, one must address the following issues:

- Does the government, and society, have the resources to provide housing to all the poor? If not, then a selection process has to be designed to identify the most deserving. This is where corruption, nepotism, political allegiance, and such negative practices inevitably come into play.
- Secondly, if the selected individuals do not have the financial ability to manage their immediate needs such as food, health, education, or other necessities, they will most likely cash in the wealth transfer and return to homelessness. In fact, some of them may find it convenient to game the policy by selling the previous endowment and lining up again for another handout.

It is for this reason that social housing in many countries is limited and often a failed experiment.

Box 2. Housing for the Disadvantaged, and Refugees, has been a Political Slogan since the Beginning

- Refugee claims and settlements-1947.
- Ghulam Muhammad's in 1950s.
- Korangi project in Ayub's era 1958-59.
- Orangi Pilot Project (OPP), Karachi 1980s.
- Khuda ki Basti (KKB), Hyderabad, Karachi and Lahore-Started in 1985.
- Bhutto's PPP used the slogan "Roti, Kapra aur Makan" and ended up regularising Katchi Abadis and illegal possessions across the country.
- During Zia ul Haq's Martial Law regime, Premier M. K. Junejo initiated 5-7 housing schemes with built houses and left office without completing any.
- PML (N) government in the 90's initiated 'Mera Ghar' apartments in all big cities; it was a good initiative with a better selection of sites and house/apartment models.
- 'Ashiana' in 2013 was another land-intensive model but was halted because of frauds.
- And now, the PTI initiative.

Every government has espoused the goal of housing for the disadvantaged. However, despite offices being set up and allocation of funds, little more than a few thousand houses for a select group were ever delivered. History keeps repeating itself and no government wants to rethink this flawed approach.

4. EVEN THE MIDDLE CLASS LACKS QUALITY HOUSING

Data suggests that even middle-class families are still living in inadequate, joint-family setups. Young, professional nuclear families in our society can't find affordable

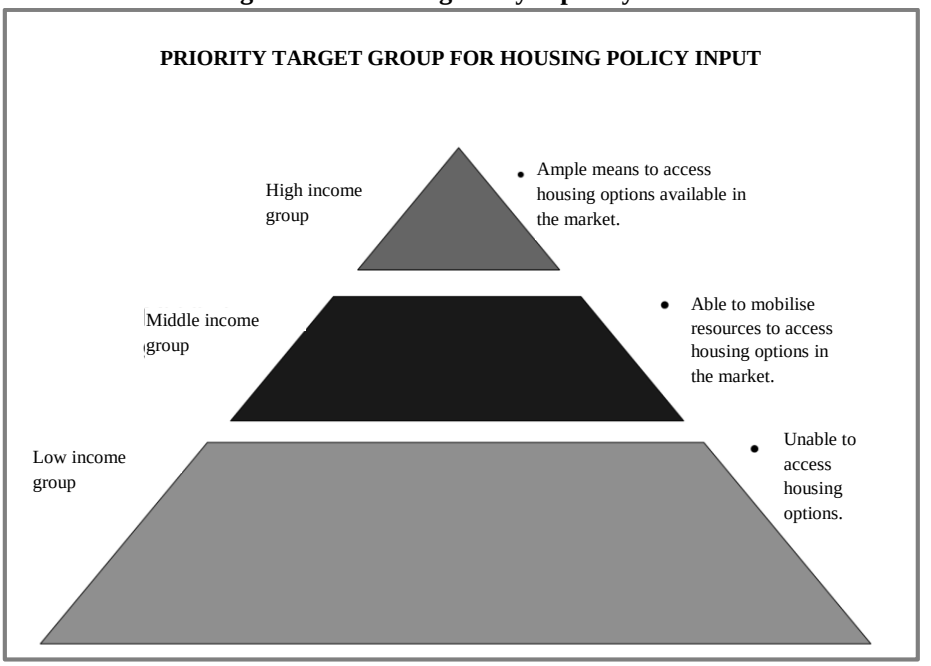
housing in the cities they work in. With that in mind, one questions the focus on providing housing for the poor without considering the needs of a productive working class as an essential requirement for the progress of the economy. The real estate market, like all markets, has a logic that must be kept in mind when designing policies.

Rental housing available to working professionals is mostly portions of residential bungalows. The rent and utilities can be up to 60 percent of the salary. Availability of rental office space is also limited. Either the quality is below par or the cost is prohibitive. This again brings one to the point where the construction of high-rise mixed-use buildings in city centres is essential to promote business activity as well as provide reasonably priced residential accommodation for working professionals. Unless steps are taken to promote this concept, urban development will not be conducive to an economically vibrant city.

As Figure 1 shows, currently, our urban sprawls benefit the top triangle of society, the affluent being the only ones who can afford suburban homes with cars and gardens. If Haque's (2015) and PIDE's (2006) concept of high-rise, mixed-use, apartment dwelling is accepted, then perhaps middle-income professionals will be able to live in a nuclear family setting rather than the current model of forced extended-family living.

If the above-mentioned model were implemented, it would become possible to provide housing for the triangle's base, which is the poorer segment of our population. The issue of rental or ownership needs reformulating. The current mainstream approach in our plan to ensure property ownership by the poor at any cost needs review, and we will turn to that. Clearly, there is no reason to fear market-based provision of rental housing for the poor if it meets their needs while the economy is offering them opportunities for social mobility (Gilbert, 2003).

Fig. 1. The Housing Policy Input Pyramid



5. THE CHIMERA OF MORTGAGES

While donors advise us to copy the West regardless of context, with expatriates thinking that those solutions are easily transferrable, in practice we have tried that path and failed. As an example, consider the haste with which we rushed to develop a REIT (Real Estate Investment Trust) law in 2011. To date, we have had only one REIT, which was to refinance an existing project of a business group with a strong balance sheet.

Despite the underlying rise in real estate value over time, mortgages are risky instruments for the following reasons:

(1) The value of the real estate does not increase as rapidly as generally believed. Even in Pakistan, on a long-term basis, the return on real estate investments is less than that of the stock market.
(2) Mortgages are long-term instruments as the amount of the loan is often multiples of an individual's annual income. Servicing a mortgage, therefore, would require a steady and growing income over the repayment period. Income growth would be necessary because the family's needs also grow during the period of repayment.
(3) For the mortgage to be financeable, the value of the property must be no more than 3-4 times the annual income of the mortgagee. Creditors will only be confident of repayment if they see that the income supports the mortgage. For mortgage markets to exist, therefore, the ratio of the average value of property to secure increasing incomes must be about 3-4 times.

We must disabuse ourselves of the notion that mortgage markets have no preconditions other than some repossession laws and government guarantees. In reality, mortgage markets require a labour market where good jobs—secure and steady—and growing incomes with risk insurance, are prevalent. In addition, both a supply of real estate and a supply of good jobs must grow in tandem to achieve some kind of balance between the value of homes and incomes.

Society continues to think of acceptable housing as a single unit with clear and exclusive land ownership. They also think that the poor live outside, or on the outskirts of the city. The result is that our cities have developed with single-function, low-rise, low-density buildings. The cities continue to grow horizontally rather than vertically. Currently, sprawl-based models occupy 60 percent of a city's footprint with an average density of 3500 persons/km^2. Ideally, this number should be more than 50,000/km^2 in a city's core (Khurshid, 2020).

The latest thinking on the urban development of cities views them as a labour market with commuting distance/time as critical to housing policy decisions. People crowd into cities for jobs. This has led to the creation of shantytowns and shared housing near city centres. People crowd into neighbourhoods like Misri Shah, Krishan Nagar, Baghbaan Pura and Shahdara in Lahore, Sadar in Rawalpindi, and Lyari, Quaidabad and Sohrab Ghot in Karachi, to be near the job market. Each of these settlements has a density of more than 30,000/km^2. Thus, these middle-income neighbourhoods are ideal in terms of high density but largely lack decent urban services.

Box 3. Some Mortgage Arithmetic

- While collateral is important for a mortgage, the creditor wants a steady source of income and does not want to undertake the costs of collecting on the collateral and disposing of it. Creditors also like to lock in a secure income to avoid the risk of collection or the price fluctuation of real estate. Thus, the most important element of a mortgage is the income of the mortgage holder.
- Mortgages are possible with property as collateral, but more importantly a "good job" is essential i.e., secure, steady, with income growth and some form of insurance to cover risk.
- The rule of thumb used by most creditors is that the borrower cannot commit her full income to servicing the mortgage. Taking into account the family's needs, servicing a mortgage, as when paying rent, should require no more than 25-30 percent of a mortgagee's income. Thus, it is safe to assume that mortgages will be available at 3-4 times a person's secure income. With that in mind, the following table shows the mortgage possibility for various income groups, from poor to rich.

Mortgage Potential by Income			
Monthly Secure Income	20,000	200,000	400,000
Annual Income	240,000	2,400,000	4,800,000
Mortgage=3*Annual	720,000	7,200,000	14,400,000
Mortgage =4*Annual	960,000	9,600,000	19,200,000

Conclusion:

- Given property prices of well over Rs.10 million, only the very rich can get a mortgage, provided they can show good, secure jobs.
- The poor, who have no secure jobs or prospects of increased income, will probably not be able to get a mortgage.

6. A HOUSE IS AN APARTMENT IN BIG CITIES

People crowd into dense centres, crammed into tenements in poor living conditions, because of the convenience of city living. If city building regulations and zoning laws are liberalised to allow mixed-use in a vertical setting, these people could spread out into flats and revitalise their neighbourhoods.

Globally, people in big cities live in flats/apartments in mixed-use neighbourhoods with ease of access that encourages foot traffic eliminating the need for cars. Why is it that the Naya Pakistan Housing authority intended to build suburban housing for the poor far away from the city? Pakistani policy needs to learn from big cities in other countries and accept that large cities cannot be vibrant entities by spreading horizontally and must adopt the vertical growth model.

7. CITIES ARE MORE THAN HOUSING

Jacobs (1969, 1984), Bertaud (2018) note that cities are a large urban market. Hence, the reason for flocking to them. The dynamism of a city arises with agglomeration

in a dense setting where people shape the city according to their unique needs. This requires flexible zoning that allows people and their ideas to shape and reshape cities over time. This dynamism is what creates jobs and opportunities.

> *"Planners should focus much less on what people do inside their buildings and living spaces, and focus more on improving the public realm and the way people interact while using workplaces, markets, streets, parks, and places of communal interactions"*
>
> Bertaud (2018)

Cities provide opportunities for education, and creative activities such as art, leisure, retail, warehousing, entertainment, entrepreneurship, and trade. Creativity and innovation add opportunities to the benefits of living in cities. Thus, a city, its labour market, and opportunities need flexible zoning and administration.

As discussed above, city managers (mostly non-technical bureaucrats) have governed our cities for decades with master plans that are rigid, extractive, and biased toward single-family homes. Cities are experiencing a sort of "command urbanism" through the exercise of a plethora of regulations derived from these master plans. The building block of our cities is either a suburban single-family home or an encroachment, thanks to poor city planning. These policies have created a crisis of housing availability and a lack of opportunities for the residents of our cities.

The PTI's housing initiative based its policy on the same thoughtless planning formula as the previous city master plans and sought only to provide housing for the poor. The question one asks is, "Where?" A related question should be, "Will the poor have the opportunity to hold onto their houses?"

Unless governments and advisers recognise that opportunities are more important than gifts, such schemes have a greater chance of failure than success. The best way is to allow cities to develop, especially in the downtown areas, like those in the rest of the world.

8. SPRAWL, PLOTS, AND CONSTRUCTION

Real estate investment is considered unproductive without any evidence to support this conclusion. This is part of our mercantilist policy approach where the industry is protected and subsidised, and services and construction are repressed (Haque, 2006). Since the popular perception is that buying real estate is unproductive, the imposition of heavy taxes and sanctions is used to dissuade people from investing in real estate. The Imran Khan government did just that by imposing heavy taxes on real estate transactions as it came into power in 2018. Transactions in most areas virtually dried up, withdrawing huge amounts of liquidity from the market, subsequently leading to a significant slowdown in growth. The recognition of the construction sector as an 'industry' by the government was a step in the right direction. However, the present government needs to recognise that the real estate sector is the real industry that drives the construction sector. The product is consumer demand for city spaces that have many shapes, of which housing is only one. As we have shown here, policy and planning have favoured sprawl and suburban housing with cars. As shown in PIDE Viewpoint 12, urban needs such as education, health, offices, retail, warehouses, markets, leisure, hotels, and public and community engagement are extremely undersupplied. Such activities perforce take place in suburban housing conversions that courts and regulators often proclaim illegal.

Box 4. Shortage of Needed City Space

The planning paradigm of Pakistani cities is as follows:

- Low rise strip malls along wide roads
- Single family houses
- Priority to cars, leading to ever-widening roads with flyovers and high-speed lanes.

The result has been that single-family homes have become units for economic activity taking on many purposes, including:

- Schools
- Offices
- Leisure space
- Restaurants
- Shops
- Warehouses

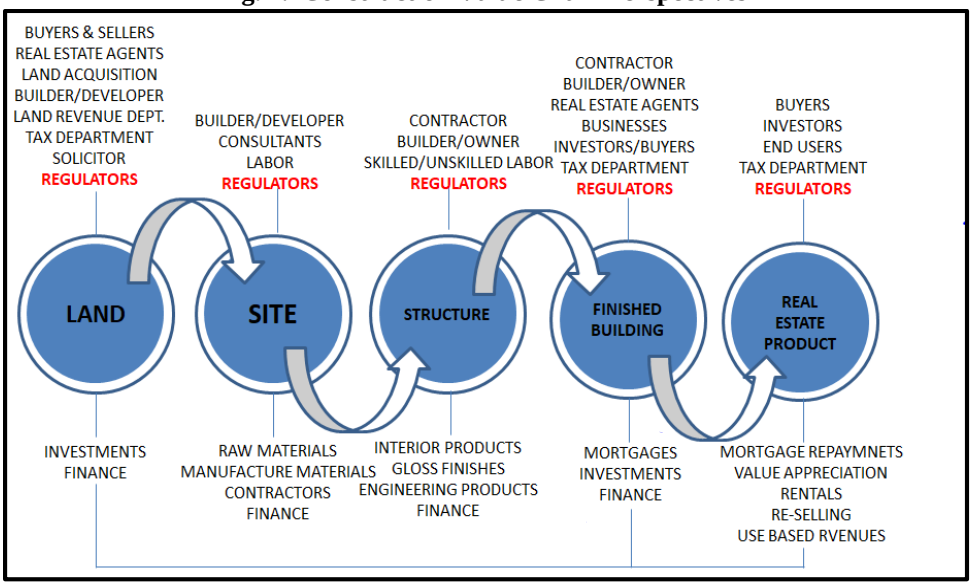
Urban planning has failed to recognise the variety of human needs or the growing population in cities. Instead, the preferred approach has been to force people into tight fantasies of planning, divorced from emerging needs, technologies, and changing lifestyles. The result is that neighbourhoods' needs and requirements wage a constant battle against the poor planning standards prevalent currently.

Courts have jumped into the game without any idea of what the sociology or economy of a city is. A poor country is therefore wasting real resources with businesses and livelihoods being destroyed and transactions costs rising inordinately as courts and planners try to enforce unrealistic and fantastic standards. This thoughtless planning is detrimental to economic growth.

Haque 2015
Haque and Nayab 2006
PIDE Policy Viewpoint 12

The big win in real estate is allowing the industry to supply complex mixed-use buildings that will provide flats, offices, retail spaces, and other needs based on market demand instead of the whims of city planners. This will mean freeing up the value chain of real estate from land to end users, as shown in Figure 2.

Fig. 2. Construction Value Chain Perspectives



Real estate investment has been an important source of wealth generation throughout human history. Indeed, Mr. Jinnah, the architect of our nation, was a perceptive real estate investor and is well known to have invested all his savings in real estate, which was the only investment choice open to the citizens of the colonised Indian subcontinent. Real estate development, through every stage of its value chain, creates wealth as well as specialised spaces that allow humans to be more productive.

In our cities, undeveloped plots rather than finished real estate is the investment of choice, all because of poor city planning, and not individual preferences. Sprawl policy favours a slow suburban development where plots are the commodity available for investment, while waiting decades for development of the said plot. Investors have no choice but to hold plots for years to make a gain. Our city planning, therefore, has created a plot market because it will not allow construction. People invest in plots, a graveyard of capital, when there is no real estate or secure investment alternative. We must allow real estate to be developed to satisfy city needs and let investors be involved in every part of the development of a real estate product.

City planners and policy-makers must recognise that value and product are both created in vibrant city spaces. Unless we allow complex multiple-use spaces that are in demand by both investors and consumers, we will not achieve the national productivity numbers required by our economy (Haque & Nayab, 2020, FEG, 2011).

9. DEREGULATE! DEREGULATE! DEREGULATE!

Our cities are mostly a flowery assemblage of suburbs with wide avenues, flyovers, and underpasses connected to a decaying old district that is not allowed to regenerate. The focus of 90 percent of the city is the affluent population and a large share of the city budget is used to service their needs. Lavish clubhouses, golf courses, race clubs, and colonial mansions occupy prime land in the most productive city cores. Meanwhile, the poor live in informal settlements or crowd into the decaying old sectors of towns that city planning wants to forget.

Box 5. A City Definition

The Haque definition of a city must be considered. He claims that cities are made of dense areas with four characteristics of city centres:

(i) Dense living in high-rise mixed-use localities;
(ii) Walking and cycling must be the preferred mode of transport;
(iii) Cars will be expensive to use downtown by imposing parking fees, fast lanes, or congestion charges;
(iv) The basic living unit will be a flat/apartment in a multiple use setting.

Haque (2015)

As Haque (2015, 2017), Haque & Nayab (2020), and *PIDE Policy Viewpoints* 2, 12 and 13, have pointed out our planning models must change. Our zoning and building regulations must allow for flexibility. The permission regime must change to facilitate work.

If construction is to pick up, we must correct our vision of a city and our current paradigm that favours a sprawl. A wholesale deregulation of the real estate sector to facilitate development, transactions, and investment is required. What is holding back real estate development is too many convoluted government regulations based on

excessive requirements of permissions and documentation, and outmoded thinking. There is a clear need to check our mercantilist approach and recognise that all economic activity, including real estate investment and development, is productive[2]. In fact, economic activity begins with purpose-built real estate in cities.

Box 6. Onerous Regulations in Real Estate!

- In the absence of an urban land management system, all cities take longer than expected to register and transfer lands. The process normally takes 45-90 days.
- Two supra committees—District Planning & Design Committee (DPDC) to oversee land use change, review, and approval, and the High Level Design Committee (HLDC) to grant approvals of buildings—are headed by non-technical bureaucrats (Commissioner & DC) and are delaying the approval process by several months.
- There is another intermediate time-consuming requirement for the construction of commercial/business and apartment buildings—that is, the commercialisation of plots. The process again takes 3-6 months under a normal process.
- City authorities do not allow mixed-use and business spaces unless they are on prescribed areas (usually located on 'Declared Commercial Roads') and in the manner that suits them.
- City regulators also act as housing developers, competing with the private sector and reducing their business space.
- Absence of the multiple ownership/condominium law to resolve and secure title issues also creates barriers to the development of high-rise and mid-rise buildings.
- Another legal tool titled "Real Estate Regulatory Act (RERA)" is in the pipeline to control the real estate market.

10. CONCLUSION

Construction is indeed a leading sector. It has been such throughout all of human civilisation. People construct cities to conduct business activities with city spaces designed for ease of doing business and thus to be a catalyst for growth. All manner of space is required for the many human needs of commerce, employment, and living. Currently, no one in city authorities fully understands or predicts these needs. This is why city planning, like central planning that had become a fad in the 20th century, is no longer practiced in most modern cities in the old top-down, predetermined fashion. Instead, planners use a light touch to work with the market and reshape cities as they grow (Jacobs, 1984; Bertaud, 2018).

There is also a clear need to check our mercantilist approach and recognise that all economic activity, including real estate investment and development, is productive. Economic activity begins with purpose-built real estate in cities. In Pakistan, the bureaucracy has had control of cities for a long time and has held to the tenet of rigid planning firmly. High-rise construction for flats, shopping malls office spaces, and many other spaces have been severely restricted. Planners have been enamoured of the American suburbia modal without providing the amenities offered there. The result is a car-favoured sprawl where only the rich have room. Employment opportunities are severely restricted and commercial spaces are in short supply. Because apartment living is seriously discouraged, there is no residential space available near employment opportunities. The poor are forced to seek informal establishments at the risk of frequent displacement.

[2]See McKinsey & Company (2017) to understand causes of low productivity in construction.

Cities cannot be directed. They must be allowed to grow according to the needs of all their residents. City centres, especially, belong to everyone. Dense construction with high-rise and mixed-use buildings in city centres will allow everyone employment and living choices. The current approach favoured by rigid planning is to provide housing opportunities to the poor on the outskirts of the city, imposing high travel costs on them for commuting to jobs.

The model of giving the poor housing out of the city and offering them cheap mortgages without good jobs and with large travel costs is flawed and may only lead to future difficulties. Such a model can be gamed by developers and the poor will get minimal benefits while the possibilities of budgetary losses, or public land being swindled, are high.

We argue here that an effort to deregulate the city is essential which may involve the following:

- Stop master plans that do not understand the dynamism of evolving city innovations. These master plans are hijacked by lobbies that prevent city innovation.
- Change rigid zoning laws that prevent citizens from accessing facilities needed to lead a productive life. There is no reason to ban commercial life near gated communities or prevent offices from overlooking the residential property. Those with a high value for privacy can move to the suburbs.
- City centres or the cores of large cities like Lahore, Karachi, Faisalabad, Peshawar, etc. must allow the construction of high-rise and mixed-use buildings to have the flexibility to adapt to changing market conditions.
- Generous floor area ratios (FARs) should be allowed so that the market can work. Not everyone will build to maximum height despite market conditions. FAR also allows flexibility in design. Building height restrictions, currently rigidly enforced, are outdated, constrain the market, are inflexible in design, and are not realistic in today's world.
- Building codes are for areas and not individual properties. There should be no reason to get building-by-building commercialisation and permission.
- The permission regime is too costly. Those entrenched in the system have an advantage and it becomes a builders' game. Let everyone with ownership develop his or her properties.
- The mistrust in the real estate sector is misplaced. There is no reason to look upon the real estate industry with suspicion and increase transaction costs in it. Documentation is not an issue only in real estate but everywhere.
- The real estate sector comprises the construction industry as well as real estate development and both work in tandem. It is a value chain that operates from land to development to the services that flow from constructed space. The stigma from any part of the value chain must be removed, and the entire industry should be allowed to transact freely.

It is important to realise that packages cannot solve the problem of over-regulation, poor policy formulation, and thoughtless planning. The real estate market requires a substantial rethink. City development, regeneration, and innovation need substantial rethinking. Without these, construction packages will not achieve much.

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Performance of Asian MFIs: The Role of Capital Structure and Macro-Institutional Quality

ADNAN HABIB and SHAHRIAR KABIR

We draw on the capital structure theory and examine whether Modigliani & Miller's capital leveraging ideology improves the performance of microfinance institutions (MFIs) under different macro-institutional quality. We develop and test a framework of the combined effect of capital structure and macro-institutional quality on both financial and social performance, which is a novel contribution. We collect data on 75 MFIs in Asia from 2009 to 2018 and applied Hausman-Taylor test.

We find that when operating in countries whose institutions are relatively weak, MFIs can better perform both socially and financially by using equity funding instead of debt or donation. As supported by the Market Failure Solution theory of institutions, MFIs perform better socially in weaker institutional quality as they can fill up the gap in the market left by traditional banks. As this gap narrows down with the improvement of institutional factors, MFIs face stronger competition from traditional banks. Such competition transposes MFI's focus toward financial performance (profit-seeking behaviour) and drifts away from social performance (objective of poverty alleviation). Furthermore, under any institutional condition, MFIs with debt or donation impose less control over capital utilisation compared to equity funding. Thus, despite initiation with a major goal of social performance, MFIs suffer from mission drift even with the support of debts and donations when operating in countries with relatively stronger institutions.

Previous literature, mostly focusing on capital structure theory and often ignoring the institutional factors, appears inconclusive in developing a framework on the issue to explain mission drift for MFIs. We contribute to this endeavor by empirically showing that the Modigliani & Miller capital structure theory (improvement of performance by leveraging the firm through external capital) cannot be applied to MFIs, and the Market Failure Solution theory of institutions is a reasonable explanation to avoid the mission drift problem.

Keywords: Microfinance, Capital Structure, Institutional Quality, Social Performance, Financial Sustainability, Mission Drift

1. INTRODUCTION

Since the emergence of Microfinance Institutions (MFIs) as the primary tool for achieving the first Sustainable Development Goal (SDG), it has gained a lot of focus in academic research. In the field, it was observed that there are vast differences in performance among MFIs. Hence, development literature primarily focused on finding the determinants of the performance of MFIs (Bogan, 2012; Gul, Podder & Shahriar, 2017). Some of these papers concluded that capital structure is the key determinant of

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MFI performance (Bogan, 2012; Tchuigoua, 2014; Khachatryan, Hartarska, & Grigoryan, 2017). The capital structure of any lending institution has been a matter of interest for both academics and practitioners since the global financial crisis in 2008. Several studies such as Cebenoyan & Strahan (2004) and Koziol & Lawrenz (2009) have established the importance of capital structure decisions on the performances of traditional banks and similar financial institutions. But MFIs are vastly different from traditional banks or profit-maximising firms in terms of their capital structure as well as organisational goals. Their capital structure does not only depend on traditional debt and equity capital but also on grants and subsidies from the government and other public investors. Although past research addressed this issue, they failed to recommend a proper guideline to MFIs for obtaining an optimal capital structure. This paper adds to the literature by developing a holistic framework for capital structure decisions based on varying levels of macro-institutional quality.

Along with capital structure, institutions and the macroeconomic environment of the country in which the MFI operates are suggested in the literature as determinants of MFI performance (Tchuigoua, 2015; Ahlin, Lin & Maio, 2011). The level of formalisation of a country's institutions has an immense impact on the performance of lending institutions within that country (An, Li, & Yu, 2016; Alimukhamedova, n.d.). However, since MFIs are different from traditional lending institutions, the traditional institutional theories may not be directly applicable to MFIs in solving such institutional matters. For example, the contract theory of institutions claims that weak institutions may lead to non-enforcement of contracts and thus induce poor performance of firms and banks (Chakraborty, 2016). MFIs, instead, use innovative ways of contract enforcement that work best in countries with weak institutional quality. A possible reason is that socially motivated MFIs perform better in relationship-based environments, where rule of law is weak. The majority of the studies are yet to reach a consensus on the relationship between capital structure and the performance of MFI (Bharti & Malik, 2021; Khan & Gulati, 2021). In addition, some studies completely reject the idea of a trade-off between social and financial performance (Quayes & Joseph, 2021). Moreover, most research ignores the combined effect of institutional quality and capital structure on the performance of MFIs, rather assessed the relation of performance separately to the role of capital or to countries' institutions.

To explore the link between optimal capital structure and the performance of MFIs at different levels of institutional quality, we combine the two determinants, capital structure, and institutional quality, in a common framework to develop a capital structure guideline that can shed light on the issue of trade-off between social and financial performance of MFIs. Thus, the study attempts to answer a contemporary question on MFIs, how does donation/equity/debt funding affect the social and financial performance of MFIs within varying levels of institutional quality? We collect 10 years data for 75 MFIs in Asia and apply the Hausman & Taylor model of panel data estimation. We find that the capital structure only affects financial performance but has no significant impact on social performance. Both donation and debt reduce the financial performance suggesting that in contrast to MM theory, there is no additional advantage for MFIs by leveraging the firms with external debt capital. On the other hand, equity funding increases financial performance indicating that MFIs should prefer equity over debt or

donation in their capital structuring. Institutional quality influences social performance irrespective of capital selection but has no significant impact on financial performance. MFIs that are operating in countries with weaker institutions tend to socially perform better, suggesting that the market failure solution theory of Vanroose & D'Espalliar (2013) is a reasonable explanation for the relationship between institutional quality and the performance of MFIs.

Our findings indicate that taking account of both capital structure and institutional quality in the strategic decision-making for MFIs is necessary to avoid mission drift and to simultaneously achieve high social and financial performance. In particular, if MFIs plan to operate in countries with relatively weaker institutions, and rely more on equity funding, the probability of maintaining a high level of both social and financial performance would increase. Past studies only focused on either of the two determinants, capital structure (Bogan, 2012) or institutional quality (Barry & Tacneng, 2014), separately as their independent variable and financial performance as the dependent variable ignoring the social performance (Bogan, 2012; Tchuigoua, 2015). This study, instead, extends that of Bogan (2012) and Barry & Tacneng (2014) by designing a combined framework of capital structure and institutional quality and accommodating both social and financial performance in a common MFI model. The study also supports and explains the claim of Alimukhamedova (n.d.) that microfinance shows a concave response function to the broader economy starting from poor institutions through moderate to developed institutions. This way the study brings a holistic approach to developing a solution for the trade-off problem between the social and financial performance of MFIs.

The remainder of this research paper proceeds as follows. Section 2 develops a theoretical framework and related testable hypotheses based on the findings of the past literature. Section 3 describes the data being used and lays out the details of the methods that are used to test the hypotheses. Section 4 presents the estimated results followed by a discussion on the results and the implications of the findings on theory and industry in Section 5. Finally, Section 6 presents the concluding remarks and future research direction.

2. THEORETICAL FRAMEWORK & HYPOTHESIS DEVELOPMENT

This study investigates the combined effect of capital structure and institutional quality specifically on MFIs. The seminal theory of capital structure (M&M theory) by Modigliani & Miller (1958) suggests that firm performance can increase by leveraging external funding (debt) because of the tax advantage. This traditional capital structure theory can be misleading for Microfinance Institutions (MFIs). MFIs get tax exemption in most countries due to their non-profit status, thus making debt less advantageous for MFIs compared to commercial firms. Hence, the optimal capital structure for an MFI is different from profit-oriented firms and requires attention to the source of the fund, its distribution, and the use of the funds for maintaining social performance and financial performance simultaneously (Khavul, 2010).[1] Bogan (2012) empirically supported this

[1]As MFIs are not-for-profit organisation, they have dual mission to achieve; increasing both social performance and financial performance. Social performance increases when MFIs help poor people come out of poverty and financial performance increases when they earn enough profit to maintain a sustainable business (Yunus, 2010)

significant relation between the MFI's capital structure and the financial performance, although ignored the issue of social performance. However, the study gave an idea of the importance of capital structure as a contributing factor in affecting MFI performance.

The market failure hypothesis of Vanroose & D'Espalliar (2013) claims that MFIs fill up the gap left in the economy by the traditional banking sector. A country with poorer institutional quality loses the confidence of traditional banking sectors and thus has more unbanked poor people. That is where socially motivated MFIs play a role by capturing the markets that are left over by the traditional banks. However, when the impact of institutional quality, like government effectiveness, is taken into consideration, the socially motivated MFIs do not have any advantage over other forms of MFIs. The government gives confidence to the financially motivated MFIs and caters to poorer clients. Political interference also influences financially motivated MFIs to reduce their social outreach. Thus, the social motivation of MFIs is often discouraged under strong institutions. This perception of the relationship between institutional factors and MFI performance has been further extended to female literacy rate and property rights (Boehe & Cruz, 2013; Barry & Tacneng, 2014).

Past studies lead to the idea that MFIs fail if they rely on donations, especially in countries that have strong institutional quality. This is because they have to compete with commercial banks and have low accountability toward their donors. When institutional quality is strong, commercial banks can rely on the protection of creditor rights and broaden their market towards poorer clients, thus increasing competition with MFIs (Vanroose & D'Espalliar, 2013). So both the social and financial performances of MFIs reduce. Although donations tend to reduce both social and financial performance, but if the MFI operates in weaker institutions then they can improve social performance. This is because MFIs are more suited to a relationship-based environment that happens when institutional quality is weak (Barry & Tacneng, 2014). So, it can be deduced that institutional quality is one of the deciding factors that influence social performance, giving rise to the first hypothesis.

Hypothesis-1 (H1): Institutional quality is negatively associated with social performance for MFIs that rely mainly on donation in their capital structure.

MFI may eventually become financially unsustainable as donations influence financial performance negatively. Bogan (2012) states that reliance on public funds such as donations and grants can reduce the financial performance of MFIs due to a lower degree of accountability and a higher possibility to create moral hazard. As such, the amount of available donation may become a deciding factor for financial performance regardless of the strength of institutional quality higher donation is expected to reduce financial performance. This assumption guided by Bogan (2012) leads to the following hypothesis.

Hypothesis-2 (H2): The proportion of donation in the capital structure is negatively associated with financial performance.

Previous studies suggest that the use of equity as a funding source leads MFIs towards mission drift regardless of the strength of institutional quality. MFI equity generally refers to the Initial Public Offerings (IPO), although a lot of MFIs also use private equity funds from angel investors. Shareholders push the MFIs to achieve a healthy return from investment. Hence, equity financing creates pressure on MFIs for profit maximisation, thus increasing financial performance (Hartarska & Nadolnyak, 2007). There is no evidence of equity having any significant effect on the social performance of MFIs in the literature. However, as mentioned in Vanroose & D'Espalliar (2013), strong institutional quality is not favourable for MFI performance. So, MFIs with equity funds and operating in a strong institutional quality would have high financial performance and low social performance. On the other hand, weak institutional quality increases the social and financial performance of MFIs since in those countries they have a larger target market and are not in competition with commercial banks (Barry & Tacneng, 2014; Vanroose & D'Espallier, 2013). In this situation, if MFIs use equity funding then their financial performance gets a further boost and MFIs can get carried away with this and start focusing only on profit-maximisation. This situation was seen in the Andhra Pradesh (AP) crisis.[2] Therefore, equity funding has more influence on social and financial performance compared to institutional quality. High equity is expected to reduce social performance and increase financial performance regardless of the level of institutional quality. Two more hypotheses can be developed from the literature findings.

Hypothesis-3 (H3): The proportion of equity in the capital structure is negatively associated with social performance.

Hypothesis-4 (H4): The proportion of equity in the capital structure is positively associated with financial performance.

According to Tchuigoua (2015), debt funding, like bank loans or bonds, ensures that MFIs have higher social performance. Commercial debt is considered to enhance social performance due to the high level of accountability towards the lending institution but reduces financial performance as the cost of debt increases (Tchuigoua, 2015; Hartarska & Nadolnyak, 2007). Debt restrains managers of MFI to engage in earnings management, thus reducing the financial performance (Lassoued, 2021). Furthermore, Fersi & Boujelbène (2021) finds that leverage can moderate the effect of risk-taking behaviour on the social efficiency of Islamic MFIs; while it can moderate the effect of credit risk-taking on the financial efficiency of conventional MFIs. Within strong institutional quality, the financial performance reduces even more due to the competition with commercial banks. Although institutional quality is strong, it will not be able to reduce social performance if debt funding is used. This means MFIs with a large

[2]In 2010, many random suicide incidents occurred in the Andhra Pradesh state of India which were reported by Biswas (2010) in BBC news (this event will henceforth be identified as "AP crisis"). While investigating it was alleged that these suicides took place due to abusive recovery practices taken by the Microfinance Institutions (Galema, Lensink, & Mersland, 2012). The MFIs in Andhra Pradesh mass-marketed their lending products and tried to achieve maximum corporate-type growth instead of building the social capital. (Haldar & Stiglitz, 2016).

proportion of debt are expected to have high social performance regardless of the strength of institutional quality.

Hartarska & Nadolnyak (2007) also support that less leveraged MFIs (i.e. holding more commercial equity) financially perform better. Equity reduces the risk of default and hence the cost of debt becomes lower, which can enhance financial performance. Tchuigoua (2015) compliments the findings of Hartarska & Nadolnyak (2007) by suggesting that regulated MFI have a positive relation with commercial debt funding but negative relation with donations. However, MFIs being regulated may have an indirect and positive influence on social performance; but no significant relation to financial performance (Hartarska & Nadolnyak, 2007). This complements the findings of Nyanzu, et al. (2018) that regulation helps improve sustainability and breadth of outreach for MFIs. The combined implication of these studies is that commercial debt funding might increase social performance, while equity funding should improve financial performance. This gives rise to our next hypothesis.

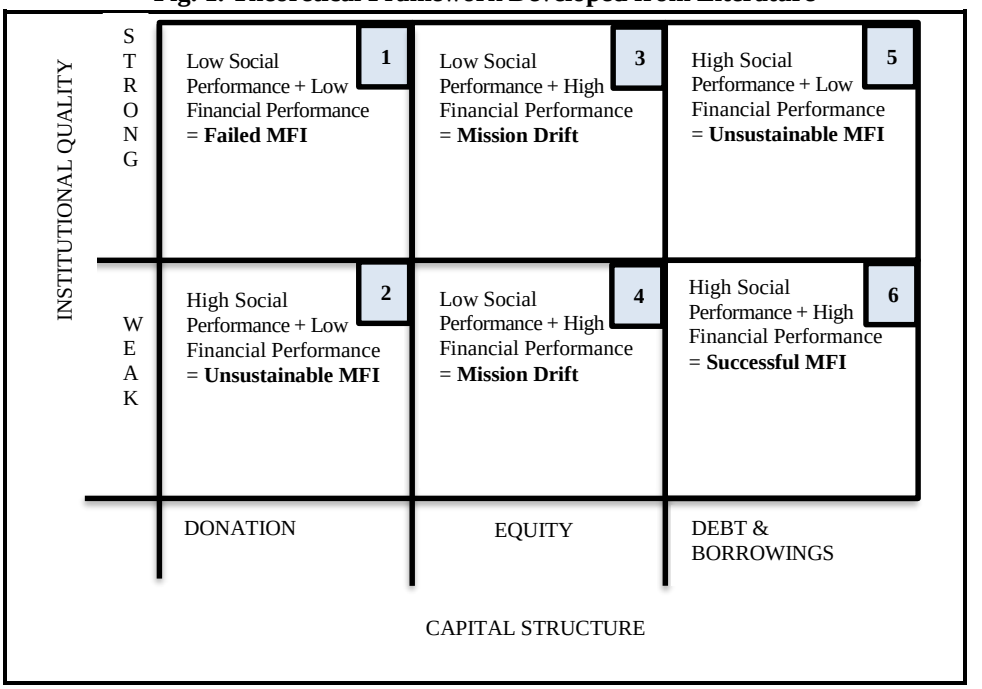
Hypothesis-5 (H5): The proportion of debt in the capital structure is positively associated with social performance.

The literature suggests that most ideal situation for an MFI is when the MFIs operate in a country with weak institutional quality and finance their operation with commercial debt. MFIs perform better, financially, in an environment with weak institutional quality (Barry & Tacneng, 2014). In this case, even if MFIs have a high proportion of debt in their capital structure the financial performance will not fall as a weak institutional environment will pull it up. As such a final hypothesis is developed below:

Hyopthesis-6 (H6): Institutional quality is negatively associated with financial performance for MFIs that rely mainly on debt in their capital structure.

These hypotheses, if proven to be true, can be used to logically determine how a combined effect of capital structure and institutional quality will influence performance, both socially and financially. Figure 1 shows the theoretical framework of the combined effect constructed based on the fundamentals of the preceding discussion. The figure is a matrix where the x-axis denotes the funding sources listed according to the degree of accountability. Debt funding forces the maximum level of accountability for any firm. The lending institutions ensure that they get back their money along with interest and hence they continue to monitor the borrower activities even after the fund has been distributed. On the contrary, donors usually consider providing funds as a one-time philanthropic activity whereby a follow-up is unnecessary. Hence donation funds have the least amount of accountability for MFIs. Although shareholders do not intervene in the activities of the company as much as the lending institutions, but they look for regular profit and hence establish some level of accountability for the firm against the equity capital. Hence, equity-based MFIs are more accountable compare to donations-based MFIs and less accountable compare to leveraged MFIs. The x-axis of Figure 1 has been organised accordingly.

Fig. 1. Theoretical Framework Developed from Literature



Notes:

Box#1 (Strong Institutional quality + Funded by Donation):

Strong institutional quality reduces both social and financial performance (Barry & Tacneng, 2014; Boehe & Cruz, 2013). Donation further reduces financial performance (Bogan, 2012). Therefore, there is low social and financial performance leading to a failed MFI.

Box#2 (Weak Institutional quality + Funded by Donation):

Weak institutional quality increases both social and financial performance (Barry & Tacneng, 2014; Boehe & Cruz, 2013). Donation funding reduces financial performance (Bogan, 2012). Therefore, there is high social performance but low financial performance leading to an unsustainable MFI.

Box#3 (Strong Institutional quality + Funded by Equity Funds):

Strong institutional quality reduces both social and financial performance (Barry & Tacneng, 2014; Boehe & Cruz, 2013). Equity funding increases financial performance (Bogan, 2012). Therefore, there is low social performance but high financial performance leading to mission drift.

Box#4 (Weak Institutional quality + Funded by Equity Funds):

Weak institutional quality increases both social and financial performance (Barry & Tacneng, 2014; Boehe & Cruz, 2013). Equity funding further increases financial performance (Bogan, 2012). MFI tend to get carried away with the boost in financial performance and start ignoring social performance as seen in AP crisis in India. Therefore, there is low social performance but high financial performance leading to mission drift.

Box#5 (Strong Institutional quality + Funded by Debt Funds):

Strong institutional quality reduces both social and financial performance (Barry & Tacneng, 2014; Boehe & Cruz, 2013). Regulated MFIs attract higher debt funding (Tchuigoua, 2015). Regulated MFIs indirectly increase social performance, through deposits (Hartarska & Nadolnyak, 2007). So, debt funding increases social performance. Therefore, there is high social performance but low financial performance leading to an unsustainable MFI.

Box#6 (Weak Institutional quality + Funded by Debt Funds):

Weak institutional quality increases both social and financial performance (Barry & Tacneng, 2014; Boehe & Cruz, 2013). Debt funding further increases social performance, through deposit facilities (Tchuigoua, 2015; Hartarska & Nadolnyak, 2007). Therefore, there is high social performance and high financial performance leading to a successful MFI.

The y-axis of the matrix in Figure 1 denotes the strength of institutional quality. Countries with effective government and judicial systems, less political intervention and corruption as well as strong property and creditor rights are considered to have strong institutional quality. Based on the hypotheses, six different combinations of funding sources and institutional quality are categorised as shown by the six numbered boxes in the matrix.

A single MFI can be in any of the six numbered boxes at a given point in time based on its capital structure decision and the institutional quality of the country in which it operates. That does not necessarily mean that the MFI will remain in that box throughout its lifetime. If the capital structure decision changes or even if the country's institutional quality varies then the MFI can shift to another box accordingly. Also, the shift of the MFI from one box to the other is not necessarily going to be in accordance with the sequence of the framework.

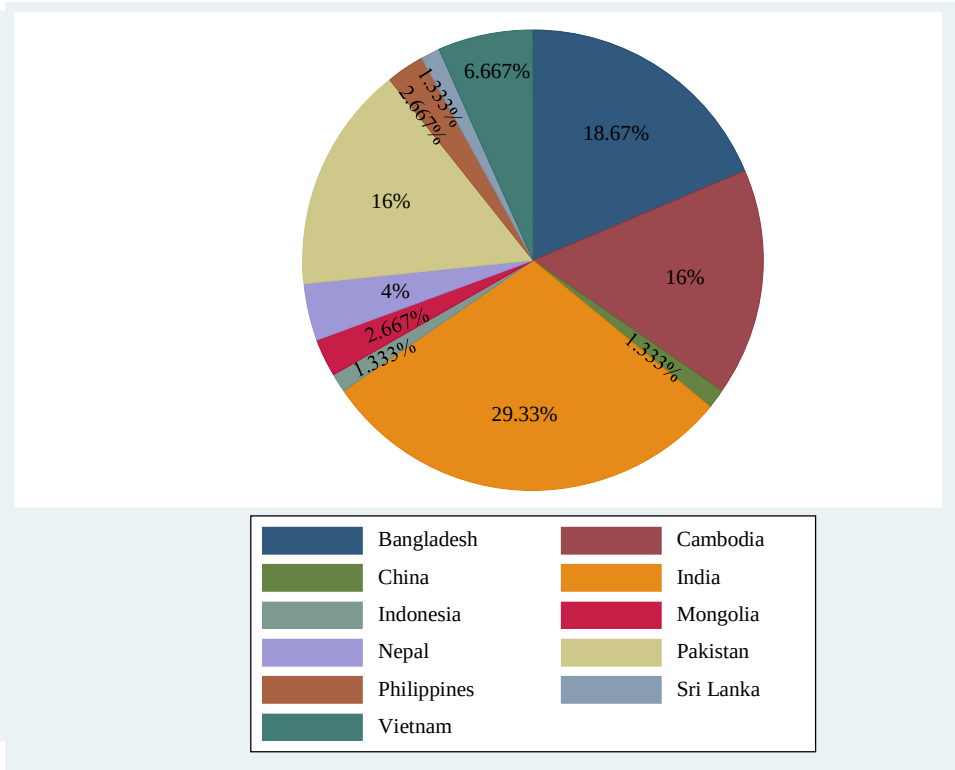
3. METHODOLOGY

With the implementation of the Hausman & Taylor model on a panel data sample of 75 MFIs in Asia, this study tests the hypotheses and justifies the framework that has been developed in the preceding section. The study attempts to identify if the combined effect of capital structure and institutional quality is necessary for MFIs to avoid mission drift and simultaneously achieve high social and high financial performance. Past studies only focused on either of the two determinants, capital structure (Bogan, 2012) or institutional quality (Barry & Tacneng, 2014), separately as their independent variable. The previous literature also focused mostly on financial performance (Bogan, 2012; Tchuigoua, 2015), as their dependent variable. Therefore, this study is the first, to the best of the author's knowledge, to bring a holistic approach to developing a solution for the trade-off problem between the social and financial performance of MFIs. This way the study sheds light on the implementation of traditional theories of capital structure on socially motivated lending institutions like MFIs.

3.1. Data and Variables

This study is conducted on Microfinance Institutions (MFIs) selected from the Asian region since the borrower concentration of MFIs is the highest in this area. According to Microfinance Market Outlook 2016, the Asia Pacific region has got the biggest market share of about 30 percent of the world (ResponsAbility Investment AG, 2017). Moreover, the MFIs from Asian countries (for example, SKS Microfinance in India and Bank Rakyat in Indonesia) are accused of mission drift. Hence, analysing a random sample from the Asia Pacific region provides some insights into the mission drift. The sample has data from 75 different MFIs from eleven countries. The period of the data is of 10 years from 2009 to 2018 providing a total of 750 observations. The distribution of country-based observations is provided in Figure 2.

Fig. 2. Country-wise Frequency Percentage Distribution of Sample



As can be seen most of the MFIs in the sample comes from South Asian countries with India, Bangladesh, and Pakistan together comprise of around 64 percent of the sample. China, Indonesia, and Sri Lanka each has only 1 MFI in the sample due to the unavailability of data. The largest percentage of East Asian MFIs comes from Cambodia and Vietnam comprising 22.67 percent together. This sample is expected to be adequate to provide valuable findings on the population.

There can be some sample selection bias in this study. The sample is designed with only the MFIs whose complete 10 years of financial data are available. Hence, those MFIs which did not survive for 10 years are not part of the sample causing survivor biases in the sampling. Since long-term financial sustainability is a variable that is estimated in this study choosing only those MFIs who have survived for a long period might produce skewed results. There are also a lot of MFIs who have data missing within their 10-year financial statements and those MFIs with missing data are not chosen in this sample. This is done to keep the panel balanced.

3.2. Data Source and Description

3.2.1. *Country-level Data: Institutional Quality and GDP Growth Rate*

This study follows the Heritage Foundation's Index of Economic Freedom score as the institutional quality measure. The index is available on the foundation's open

database website. This index uses variables of both economic freedom and institutional measures. Heritage Foundation primarily calculates the index based on four key aspects: rule of law, government size, regulatory efficiency, and market openness. In assessing these four categories, the index measures twelve specific institutional components on a scale from 0 to 100 (Heritage Foundation, 2017).[3] Scores of these twelve components of economic freedom are equally weighted and averaged to produce the overall economic freedom score for each economy. Zhao & Lounsbury (2016) uses the variable market logic as a measure of economic freedom that is primarily under market openness; however, this study uses the total index measure as suggested by Billmeier & Massa (2009). For the countries selected in this study, only ten out of the twelve institutions' data are available and have been used for the calculation of the final score. Although other papers have used various sources like World Bank (Tchuigoua, 2014) or Doing Busines (Barry & Tacneng, 2014) for individual institutional data at the national level, Heritage Foundation's index gives a more comprehensive measure as they accommodate data from all those sources into a single score. The foundation categorises the countries' economic freedom into five categories based on the final score, which are "free" (80-100 score), "mostly free" (70-79.9 score), "moderately free" (60-69.9 score), "mostly unfree" (50-59.9 score) and "repressed" (score equal or below 49.9).

Table 1

Descriptive Statistics of the Raw Data

	Descriptive Statistics						
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
Outreachbreadth	750	478.00	8166287.00	539051.6797	1340299.17134	3.784	13.778
Outreachdepth	750	34.56	7923.00	403.8892	841.46176	5.113	30.614
OSS	750	–.10	6.67	1.1804	.34922	5.132	83.035
Debt	750	.01	1.33	.7690	.16984	–1.842	4.906
Equity	750	–.92	.99	.1876	.17206	.996	8.734
Donation	750	.00	1.49	.0428	.12044	5.466	43.470
Institutionalquality	750	44.2	63.6	54.321	3.0829	–.711	1.802
Size	750	44819.00	6612000000.00	208937839.6125	670491942.89272	6.191	45.046
GDP	750	–1.27	17.29	6.3239	2.37227	.041	1.401

Table 1 shows the descriptive statistics of the raw data of the sample. The institutional quality measure (i.e. Heritage Foundation's Index of Economic Freedom score) has a mean of 54.321 percent which falls under the "mostly unfree" category. Hence, we can see that most MFIs in the sample operate in economies that have weak institutions and are mostly not free for investments. The moderately negative skewness and very low standard deviation suggest that there is little tendency for improvement. The other country-level variable is the annual GDP growth rate which is collected from the World Bank's database. This variable is a country-level macroeconomic control variable. The annual GDP growth rate has been on average 6.32 percent with a skewness value that suggests that the GDP rates are mostly symmetrical around the mean shown in Table 1.

[3]The Heritage Foundation Index measures the following twelve institutions: property rights, government integrity, judicial effectiveness, government spending, tax burden, fiscal health, business freedom, labour freedom, monetary freedom, trade freedom, investment freedom, and financial freedom.

3.2.2. *Firm-level Data*

The firm level, MFI-specific variables include breadth of outreach, depth of outreach, operational self-sufficiency (OSS), the proportion of debt capital, proportion of equity capital, proportion of donated capital, and size of MFI. Studies have shown that outreach measures are the appropriate indicator of social performance for MFIs (Bibi, Balli, Matthews, & Tripe, 2018). All firm-level data are collected from the MIX Market database. According to Chakravarty & Pylypiv (2015), MIX Market is the largest data source on microfinance covering approximately 2000 MFIs globally. These MFIs have more than 80 percent of the entire client base of MFIs in the world. In MIX the data is self-reported by the MFIs themselves but are reviewed by the experts at MIX against audits or other qualified sources. The data are also standardised by MIX specialists according to worldwide acceptable accounting standards IFRS guidelines as suggested by the World Bank. Chakravarty & Pylypiv (2015) states that the database review system of MIX conducts more than 135 quality checks to ensure the accuracy of the submitted data. MIX also ranks the MFIs on a scale of one to five on the diamond system based on the reliability of the information; higher diamonds imply that the data are more reliable.

Except for OSS, Debt, and Equity, other MFI-specific variables have a higher standard deviation than the mean value as seen in Table 1. Both the social performance measures, breadth of outreach (i.e. number of active borrowers) and depth of outreach (i.e. average loan size per borrower), show very high positive values of skewness with a very high standard deviation value compared to their mean. This means that most MFIs have higher than average values of breadth and depth of outreach. The mean value for OSS is above 1 meaning that most of the MFIs in this sample are financially sustainable throughout the ten years. All three funding sources are expressed as a percentage of total assets. The MFIs have a very high percentage of debt funding on average of 76.9 percent throughout the ten years. This suggests that most of the firms are dependent on borrowings. Equity funding has a mean value of 18.76 percent which is quite low compared to debt. The standard deviation is higher with a moderately positive skewness suggesting that a good number of MFIs lie above the average equity rate. This is ensured by the maximum equity value of 99 percent. Among the capital structure variables, donation has the lowest mean value of 4.28 percent suggesting that MFIs within this sample has limited access to donations. These are determined by the "donated equity" account head from the balance sheet of MFIs. The standard deviation of donation is quite high compared to its mean suggesting there are some outliers. However, those outliers are more at the upper end since skewness is highly positive. The size of MFIs also shows a large positive skewness with very high variability suggesting that very large MFIs have been chosen in this sample. This is implied by the average total asset value in the sample which is $208,937,839.61.

3.3. Models and Estimation

Six models are constructed in this study to test the six hypotheses that are developed in the preceding section. The models are as follows:

$$Model\#1: SocPer_{it} = a_0 + Donation_{it} + a_2 InsQual_{it} + a_3 \sum Controls_{it} + \varepsilon_{it} \quad \dots \quad (1)$$

$$Model\#2: FinPer_{it} = \beta_0 + \beta_1 Donation_{it} + \beta_2 InsQual_{it} + \beta_3 \sum Controls_{it} + \mu_{it} \dots \quad (2)$$

$$Model\#3: SocPer_{it} = y_0 + y_1 Equity_{it} + y_2 InsQual_{it} + y_3 \sum Controls_{it} + \xi_{it} \quad \ldots \quad (3)$$

$$Model\#4: FinPer_{it} = \lambda_0 + \lambda_1 Equity_{it} + \lambda_2 InsQual_{it} + \lambda_3 \sum Controls_{it} + \tau_{it} \quad \ldots \quad (4)$$

$$Model\#5: SocPer_{it} = \omega_0 + \omega_1 Debt_{it} + \omega_3 InsQual_{it} + \omega_3 \sum Control_{it} + \chi_{it} \quad \ldots \quad (5)$$

$$Model\#6: FinPer_{it} = \eta_0 + \eta_1 Debt_{it} + \eta_2 InsQual_{it} + \eta_3 \sum Controls_{it} + \Omega_{it} \quad \ldots \quad (6)$$

Here, $SocPer_{it}$ is social performance measured by outreach and transformed in the log values for normality. $FinPer_{it}$ is financial performance measured as the OSS value of the MFIs. $Donation_{it}$, $Equity_{it}$, and $Debt_{it}$ are each the percentage of funds from the respective capital sources on total assets. $InsQual_{it}$ is the institutional quality measure of the Heritage Foundation Index of Economic Freedom score in decimals of the country in which the MFI operates. $\sum Controls_i$ are the group of control variables comprising of the size of MFI (taken as log value of the total asset for normality), type of MFI (bank, non-bank financial institution, non-governmental organisation), and percentage increase of national Gross Domestic Product (GDP).

Models# 1, 3, and 5 are each separated into two models; as such $SocPer_{it}$ in models# 1a, 3a, and 5a, are represented by the breadth of outreach while $SocPer_{it}$ in models# 1b, 3b, and 5b are represented by the depth of outreach. Hence there are nine models in total as follows:

$$Model\#1a: Breadth_{it} = \alpha_0 + \alpha_1 Donation_{it} + \alpha_2 InsQual_{it} + \alpha_3 \sum Controls_{it} + \varepsilon_{it} \quad \ldots \quad (7)$$

$$Model\#1b: Depth_{it} = \theta_0 + \theta_1 Donation_{it} + \theta_2 InsQual_{it} + \theta_3 \sum Controls_{it} + \delta_{it} \quad \ldots \quad (8)$$

$$Model\#2: OSS_{it} = \beta_0 + \beta_1 Donation_{it} + \beta_2 InsQual_{it} + \beta_3 \sum Controls_{it} + \mu_{it} \quad \ldots \quad (9)$$

$$Model\#3a: Breadth_{it} = \gamma_0 + \gamma_1 Equity_{it} + \gamma_2 InsQual_{it} + \gamma_3 \sum Controls_{it} + \xi_{it} \quad \ldots \quad (10)$$

$$Model\#3b: Depth_{it} = \kappa_0 + \kappa_1 Equity_{it} + \kappa_2 InsQual_{it} + \kappa_3 \sum Controls_{it} + \varphi_{it} \quad \ldots \quad (11)$$

$$Model\#4: OSS_{it} = \lambda_0 + \lambda_1 Equity_{it} + \lambda_2 InsQual_{it} + \lambda_3 \sum Controls_{it} + \tau_{it} \quad \ldots \quad (12)$$

$$Model\#5a: Breadth_{it} = \omega_0 + \omega_1 Debt_{it} + \omega_2 InsQual_{it} + \omega_3 \sum Controls_{it} + \chi_{it} \quad \ldots \quad (13)$$

$$Model\#5b: Depth_{it} = \sigma_0 + \sigma_1 Debt_{it} + \sigma_2 InsQual_{it} + \sigma_3 \sum Controls_{it} + o_{it} \quad \ldots \quad (14)$$

$$Model\#6: OSS_{it} = \eta_0 + \eta_1 Debt_{it} + \eta_2 InsQual_{it} + \eta_3 \sum Controls_{it} + \Omega_{it} \quad \ldots \quad \ldots \quad (15)$$

The data collected for this particular study are in the longitudinal form and hence panel estimation approach is implemented. According to Young & Johnson (2015), panel data allow for stronger inferences about change processes and more control of unmeasured differences between individuals that can bias study findings. The two most common linear panel estimation methods are fixed effect and random effect estimations. Both methods take the unobserved heterogeneity of individual institutions or firms into consideration. Under fixed effect the heterogeneity is considered fixed over time and correlated with the explanatory variables while in random effect it is considered random over time and uncorrelated with each explanatory variable (Wooldridge, 2013). Mundalk (1978) argued that the random effect model assumes the exogeneity of all the regressors and the random individual effects, while the fixed effect model assumes the endogeneity of all the regressors and the individual effects.

In contrast to these, Hausman & Taylor's (1981) panel data estimator allows for some of the explanatory variables' endogeneity while the others remain exogenous.

According to Baltagi & Liu (2012), the Hausman & Taylor model (HT model) is more suitable than either fixed effect or random effect because of two reasons; it considers the endogenous character of a few of the explanatory variables, and it estimates the effect of time-invariant variables. This study faces the risk of endogeneity of the capital structure variables. For example, Tchuigoua (2014) found a significant relation between regulated MFIs and their funding source. Also, Zhao & Lounsbury (2016) found a significant association between religious diversity and capital structure. Hence, there is a possibility that some of these variables will be embedded in the residuals causing endogeneity with the capital structure variables. Furthermore, for most models in this study, the Hausman specification test result prefers Fixed Effect estimation. However, the fixed effect removes the dummy variable for legal status which is an important control variable for the study. Hence Hausman & Taylor's estimation is used in this study to curb the effect of the endogeneity of the capital structure variables and to effectively control for the legal status control variable.

4. RESULTS

The results are presented in Table 2 based on the Hausman & Taylor estimation. Overall the results suggest the importance of considering both capital structure and institutional quality together in determining the performance of MFIs. All three capital structure variables, donation, equity, and debt are significantly associated with financial performance but show statistically insignificant relation with social performance. Both donation and debt have negative associations with financial performance; however, the level of significance for debt is 10 percent which is weaker in comparison to the 1 percent level of significance for donation. Equity is the only capital component that showed a positive relation with financial performance, significant at 1 percent level. In addition, institutional quality significantly negatively influences social performance, both in breadth and depth of outreach, but has no relation with financial performance. This indicates that in order to maintain high performance in terms of both social and financial sustainability, it is important to make appropriate capital structure decisions as well as to consider the quality of the national institution.

Among the control variables, the size of MFIs shows a significant positive association with social performance through the breadth of outreach and financial performance at 1 percent level but has a significant negative association with social performance through the depth of outreach at 1 percent level. GDP growth is significant and negatively related to social performance measures, through both breadth and depth of outreach, while shows a positive and significant relationship with the financial performance of MFIs. The dummy variable for bank MFIs shows a significant negative association with both social and financial performance. NBFI type of MFIs shows negative relation with the breadth of outreach, significant at a 10 percent level, only when donation or debt is used as a funding source. The $\text{dummy}_{\text{nbfi}}$ variable has no significant relation with financial performance. Due to multicollinearity, the dummy variable for NGO is omitted by the estimator in all the models. Overall the results suggest that in countries with weak institutions and low GDP growth rates, a large MFI funded primarily with equity tends to have high social and high financial performance.

4.1. Robustness Checks

4.1.1. *Fixed and Random Effect*

Although the Hausman and Taylor estimation is the most appropriate method for this study, nonetheless the fixed effect and random effect were also estimated for each model to see if there are any major variations in the results. Table 3 shows the results of the fixed effect and Table 4 shows the result of the random effect. As expected, the fixed effect omits all three legal status dummy variables. However, the significance and relation of the other independent variables with the dependent variables did not change from that of the Hausman and Taylor (HT) estimation. Similar results are seen in table 4 for the random effects model. The Hausman specification test determines for all the models that fixed effect is more suitable than random effect. However, this study follows the suggestion of Egger (2002) which is to verify fixed and random effect estimation using the HT method. This is due to the fact that time-invariant dummy variables were not considered in the fixed effect model and also some variables' exogenous nature were also ignored in the fixed effect. A similar methodology was confirmed in Kabir, Block & Salim (2018). Hence it can be said that the results of HT methods are more robust than either fixed effect or random effect.

4.1.2. *Country-fixed Effect*

This is a regional study focusing on MFIs from eleven Asian countries. Hence, the MFIs are expected to be mostly homogenous in nature. However, there can still be some specific cultural, political, or environmental differences between countries. Hence, the models are re-estimated using dummy variables to control for the country's fixed effects. The results from the country fixed effect regressions do not differ much from the Hausman & Taylor results, except for model# 3-a where the coefficient of equity is positive; however, the relation remains insignificant. Since the significance level and values of all the time-variant factors remain similar to the previous results, it can be stated that the original results are robust.

Some major changes, however, occur in the legal status dummy variables when country-fixed effects are considered. In models with number of active borrowers (NAB) as the dependent variable (models# 1-a, 3-a, and 5-a), the bank and NBFI dummy variables become insignificant after controlling for country-fixed effects. Whereas, in the models with average loan size per borrower (ALSB) as the dependent variable (models# 1-b, 3-b, 5-b) the relation with the bank dummy has reversed from positive to negative as well as remaining insignificant. The NBFI dummies in those models become insignificant with no change in the sign of the coefficient. It can be suggested from this change in results, that the country-fixed effects were mostly embedded within the legal status dummy variables and hence the coefficients of the legal status control variables are biased in those estimations. Most of the country dummy variables significantly associated with the legal status variables, suggesting that specific cultural and political differences between the countries may affect the legal status of MFIs. However, presence of the country-specific differences does not influence the performance measure.

Table 2

Results of All Nine Regression Models using Hausman & Taylor Estimation

	Donation			Equity			Debt		
Independent Variables	Model#1-a (breadth)	Model#1-b (-depth)	Model#2 (OSS)	Model#3-a (breadth)	Model#3-b (-depth)	Model#4 (OSS)	Model#5-a (breadth)	Model#5-b (-depth)	Model#6 (OSS)
Capital Structure	–0.0637529	–0.0615638	–0.4207755***	0.009915	–0.1035505	0.4711907***	0.0578162	0.1650146	–0.2725326*
	(0.2868413)	(0.2191666)	(0.1345796)	(0.2097887)	(0.1317878)	(0.1366693)	(0.2140664)	(0.1650081)	(0.1573623)
InsQual	–2.101268***	2.656914***	0.4159069	–2.114428***	2.736248***	0.0670374	–2.055208***	2.800891***	0.2511485
	(0.7965411)	(0.8218501)	(0.9549838)	(0.7853549)	(0.8042519)	(0.9667523)	(0.7957442)	(0.8342917)	(0.9832699)
Ln(size)	0.6578397***	0.3399344***	0.0271581**	0.6601736***	0.3424648***	0.0419546***	0.6583183***	0.3367743***	0.0492947***
	(0.0386108)	(0.0346393)	(0.0129396)	(0.0364623)	(0.0323574)	(0.0123903)	(0.0370113)	(0.0334786)	(0.0131609)
GDPgrowth	–1.239777***	1.547464***	1.494269***	–1.269097***	1.461732***	1.551075***	–1.274699***	1.511736***	1.328951***
	(0.4658102)	(0.4975484)	(0.4801764)	(0.468624)	(0.4970892)	(0.4869143)	(0.4474457)	(0.4762313)	(0.5021261)
dummybank	–0.6546872**	0.358836	–0.1596242**	–0.6551836**	0.361261	–0.1765425**	–0.6532656**	0.3632923	–0.1682985**
	(0.2807559)	(0.2456305)	(0.0633071)	(0.2810144)	(0.2462096)	(0.0771278)	(0.2791647)	(0.2445843)	(0.0718658)
dummynbfi	–0.3280866*	0.3748638**	–0.0488589	–0.325906	0.3811068**	–0.051106	–0.3256974*	0.3768242**	–0.034438
	(0.1944231)	(0.183708)	(0.0459749)	(0.1930648)	(0.1826692)	(0.0430768)	(0.1912711)	(0.18293)	(0.0428562)
dummyngo	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)
constant	1.839857***	–2.336226***	0.4593706	1.803009***	–2.404118***	0.2867983	1.760255***	–2.488726***	0.3629189
	(0.7097973)	(0.684748)	(0.566406)	(0.6820654)	(0.6634633)	(0.5390583)	(0.6881722)	(0.6594742)	(0.5741071)

This table shows nine regression results of the nine models with three MFI performance indicators as dependent variables: breadth of outreach, depth of outreach and OSS. The main independent variables are donation (for models#1-a, 1-b, 2), equity (for models#3-a, 3-b, 4), debt (for models#5-a, 5-b, 6), and Institutional quality (in all models). The remaining variables are all MFI-specific and macroeconomic control variables.

* Significant at 10 percent.

** Significant at 5 percent.

*** Significant at 1 percent.

Table 3

Results of All Nine Regression Models using Fixed Effect Estimation

	Donation			Equity			Debt		
Independent Variables	Model#1-a (breadth)	Model#1-b (-depth)	Model#2 (OSS)	Model#3-a (breadth)	Model#3-b (-depth)	Model#4 (OSS)	Model#5-a (breadth)	Model#5-b (-depth)	Model#6 (OSS)
Capital Structure	–0.0867254	–0.0402922	–0.3871507***	0.0164772	–0.1091613	0.4523272***	0.0665401	0.1565275	–0.042609845
	(0.2929915)	(0.2232405)	(0.1328168)	(0.2134957)	(0.133123)	(0.1292487)	(0.2148809)	(0.1659025)	
InsQual	–1.65864***	2.314491***	–0.1462412	–1.679906**	2.402053***	–0.557102	–1.604192*	2.456774***	–0.4385255
	(0.8282585)	(0.8513454)	(1.171185)	(0.8169143)	(0.8340223)	(1.173853)	(0.8282915)	(0.8666631)	(1.200006)
Ln(size)	0.6449893***	0.3500152***	0.0579872***	0.6481975***	0.3517946***	0.0713723***	0.6460176***	0.3463009***	0.0817613***
	(0.040268)	(0.0360235)	(0.0181546)	(0.0381871)	(0.0337756)	(0.0166005)	(0.0387008)	(0.0349867)	(0.0167094)
GDPgrowth	–1.314582**	1.56046***	1.907608***	–1.353164**	1.483743***	1.925991***	–1.36218***	1.536979***	1.701382***
	(0.4527514)	(0.4908954)	(0.4965241)	(0.4515621)	(0.4885713)	(0.4949166)	(0.4296017)	(0.4663178)	(0.5103222)
dummybank	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)
dummynbfi	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)
dummyngo	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)
constant	1.561053***	–2.094549***	0.1521449	1.512689***	–2.149314***	0.0409487	1.461781***	–2.228174***	0.1094137
	(0.7248441)	(0.7012568)	(0.663937)	(0.7042908)	(0.6853006)	(0.6377809)	(0.7151754)	(0.685485)	(0.6753751)

This table shows nine regression results of the nine models with three MFI performance indicators as dependent variables: breadth of outreach, depth of outreach and OSS. The main independent variables are donation (for models#1-a, 1-b, 2), equity (for models#3-a, 3-b, 4), debt (for models#5-a, 5-b, 6), and Institutional quality (in all models). The remaining variables are all MFI-specific and macroeconomic control variables.

* Significant at 10 percent.

** Significant at 5 percent.

*** Significant at 1 percent.

Table 4

Results of All Nine Regression Models Using Random Effect Estimation

	Donation			Equity			Debt		
Independent Variables	Model#1-a (breadth)	Model#1-b (-depth)	Model#2 (OSS)	Model#3-a (breadth)	Model#3-b (-depth)	Model#4 (OSS)	Model#5-a (breadth)	Model#5-b (-depth)	Model#6 (OSS)
Capital Structure	–0.0690751 (0.2757055)	–0.0576281 (0.2111572)	–0.39529*** (0.1456737)	–0.0244536 (0.2067059)	–0.0875735 (0.1327963)	0.4048013*** (0.1379575)	0.1037313 (0.2086115)	0.1414818 (0.1642893)	–0.2308504* (0.1335535)
InsQual	–2.279012*** (0.7874761)	2.761671*** (0.8146822)	0.4764639 (0.9319527)	–2.290085*** (0.7778742)	2.832141*** (0.7957083)	0.1994533 (0.9347785)	–2.23865*** (0.7868482)	2.892194*** (0.8242071)	0.3757854 (0.9365577)
Ln(size)	0.6623899*** (0.0380711)	0.3372679*** (0.0342966)	0.0248312* (0.0127545)	0.66566*** (0.035899)	0.3394895*** (0.0320202)	0.0382103*** (0.0122294)	0.6627543*** (0.0363076)	0.3345154*** (0.0330508)	0.0435643*** (0.0129498)
GDPgrowth	–1.203452** (0.4703701)	1.53928*** (0.4979519)	1.425922*** (0.4869091)	–1.248209*** (0.4736082)	1.463435*** (0.4967954)	1.462137*** (0.5016421)	–1.233625*** (0.4571254)	1.505344*** (0.47966)	1.269475** (0.5096883)
dummybank	–0.6583865** (0.278734)	0.3611027 (0.2443142)	–0.1557325** (0.0626684)	–0.658607** (0.2780601)	0.3632445 (0.244916)	–0.1700501** (0.073919)	–0.6566947** (0.2760122)	0.3650984 (0.2433788)	–0.1618035** (0.0698163)
dummynbfi	–0.062581408	0.3726749** (0.1826952)	–0.0488625 (0.0457272)	–0.3203976* (0.1911262)	0.3780901** (0.1816054)	–0.0500782 (0.0431233)	–0.3211361* (0.1894202)	0.3743827** (0.1820069)	–0.0361468 (0.0426757)
dummyngo	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)
constant	1.854732*** (0.7001864)	–2.346079*** (0.6778372)	0.4692612 (0.5577744)	1.806791*** (0.6738958)	–2.406849*** (0.6576907)	0.2961074 (0.5240513)	1.743827*** (0.6796793)	–2.479975*** (0.6542833)	0.3656614 (0.5411662)

This table shows nine regression results of the nine models with three MFI performance indicators as dependent variables: breadth of outreach, depth of outreach and OSS. The main independent variables are donation (for models#1-a, 1-b, 2), equity (for models#3-a, 3-b, 4), debt (for models#5-a, 5-b, 6), and Institutional quality (in all models). The remaining variables are all MFI-specific and macroeconomic control variables.

* Significant at 10 percent.

** Significant at 5 percent.

*** Significant at 1 percent.

4.1.3. *Combined Funding Models*

Taking a single funding source as the capital structure variable may not be able to capture the correlation with the other sources of funds. To control for possible correlation between the funding sources, three new models are developed by combining all the funding sources. These models are mentioned as "combined models" henceforth. In each of the combined models, one of the three (NAB, ALSB, and OSS) performance measures is used as the dependent variable.

In the combined model, the capital structure variables, i.e., equity, debt, and donation show a positive coefficient with NAB which contradicts the previous models. However, none of the coefficients are insignificantly associated with the number of active borrowers (NAB), suggesting that the correlation among the capital component does not affect the implication of the study. The coefficients of the institutional quality variable as well as all the control variables in the first combined model are not different in terms of statistical significance and relationship compared to the results of models# 1-a, 3-a, and 5-a. Similar results are observed for the case of average loan size per borrower (ALSB) in the second combined model and OSS in the third combined model.

5. DISCUSSION OF RESULTS

The results suggest that capital structure and institutional quality are important considerations for MFI's performance. In particular, funding sources show a significant impact on financial performance but not on social performance. This automatically rejects hypothesis 3 (H3) and hypothesis 5 (H5) which suggested significant relation between equity and debt respectively on social performance. On the other hand, the institutional quality of the host country shows a significant impact on social performance but not on financial performance. This selection analyses the results and relates the findings to the theory and practice**.**

5.1. Analysis of Institutional Quality

In Models# 1-a, 3-a, and 5-a, the coefficients of Institutional Quality come out to be significant at a 1 percent level and affect the number of active borrowers (NAB) negatively. NAB is an indicator of the breadth of outreach suggesting that when institutional quality is strong the breadth of outreach is low. Also in Models# 1-b, 3-b, and 5-b the coefficient of Institutional Quality comes out to be significant at a 1 percent level and affects average loan size per borrower (ALSB) positively. A lower ALSB indicates a higher depth of outreach suggesting that when institutional quality is weak, the depth of outreach is high. This means that even if a country's rule of law is not very strong, government size is relatively smaller, regulations are less efficiently implemented and markets are somewhat controlled, MFI tends to maintain reasonably high social performance. Thus, our results show that hypothesis 1 (H1) could not be rejected. This finding is contradictory to the conventional theories that link institutional quality to the performance of commercially driven financial institutions.

Kanagaretnam, Lim, & Lobo (2011) claims that stronger legal, extra-legal, and political institutions are associated with higher levels of earnings for commercial banks. This theory is further supported by the Contract Theory of institutions which claims that weak institutions may lead to non-enforcement of contracts and thus induce poor

performance of firms and banks (Chakraborty, 2016). However, MFIs do not entirely depend on institutional protection. Instead, they use innovative methods of contract enforcement such as group lending, close monitoring, and ensuring accountability. Hence the contract theory of institutions does not apply to socially motivated firms like MFIs. Instead, MFIs create credit networks in the informal sector and elude the high transaction costs that are present in the formal sector of an economy with weak institutional quality (Boehe & Cruz, 2013). Barry & Tacneng (2014) explains that weak institutions foster relationship-based transactions which are an expertise of the MFIs, unlike traditional banks which are better suited for a formal environment. Hence, MFIs perform well socially when operating in countries with weak institutional quality. The results of this study suggest that the traditional institutional theories may not be applicable to socially motivated firms like MFIs.

The tendency of MFIs to perform well in the relatively weaker institutional framework can be explained by the market failure solution theory of MFI as suggested by Vanroose & D'Espallier (2013). Profit-oriented traditional banks are particular about the lack of collateral and low repayment risk within a weak institutional economy and hence prefer not to enter in such markets (Boehe & Cruz, 2013). This creates a gap in the financial industry in countries with relatively weaker institutions and MFIs can fill up those gaps. In countries with strong institutions, the MFIs stand to be in direct competition with the traditional banks and hence their outreach is narrow. This idea is supported by the findings of Cull, Demirgüç-Kunt & Murdoch (2014) that MFIs narrow down their outreach and concentrate on a niche market in economies where there is greater penetration of commercial banks. As commercial banks preferably expand their operation when institutional quality is strong, the scope for MFIs to socially perform in such an environment shrinks (Boehe & Cruz, 2013). This study supports the idea that strong institutions may affect the social performance of MFIs.

Both Vanroose & D'Espallier (2013) and Barry & Tacneng (2014) observed significant negative relation between institutional quality and the financial performance of MFI which contradicts the results of this study. The estimated results suggest a positive but insignificant relation. This may happen due to the positive spillover effect of traditional banking sector development caused by improved institutional quality as suggested by Cull, et al. (2014). When institutional quality improves, commercial banks can extend their credit lines to MFIs. So, instead of competing directly with MFIs the traditional banking sector can reinforce the development of the microfinance sector by providing loans to MFIs. When such positive spillover happens MFIs' financial performance can increase, as they are open to more funds, even under stronger institutions. MFIs in Asian countries seem to rely on loans from commercial banks as can be seen in the high mean value of debt percentage in Table 1. This can be the reason for the positive relation between the institutional quality and financial performance of Asian MFIs. However, since all the countries within the sample have, on average, weak institutions (shown by the mean value of institutional quality index score in Table 4.1) it cannot be a certain claim that the increased debt funding is due to the substantial development in the traditional banking sector. Hence, the positive association is found statistically insignificant in this study. Thus, it is proven that hypothesis 6 (H6) is rejected since the institutional quality was found to have no effect on the financial performance of MFI using debt.

5.2. Analysis of Capital Structure

Capital structure does not significantly influence social performance. The coefficients of each of the three funding sources are statistically insignificant to the breadth of outreach in Models# 1-a, 3-a, and 5-a as well as to the depth of outreach in Models# 1-b, 3-b, and 5-b. These findings conform to that of Hartarska & Nadolnyak (2007) which implied that the outreach of MFI is not affected by leverage or capitalisation. Hence, hypothesis 3 (the relation between equity and social performance) and hypothesis 5 (the relation between debt and social performance) can be rejected. As such, the results of this study do not comply with the combined findings of Hartarska & Nadolnyak (2007) and Tchuigoua (2015). According to Hartarska & Nadolnayak (2007), regulated MFIs have high social performance while, as per Tchuigoua (2015), regulated MFIs attract more debt funds. Together, being regulated is the mediating factor for MFIs that rely on debt to have high social performance. The MFIs that do not collect deposits like NBFI and NGOs are usually less regulated compared to deposit-collecting MFIs like banks (Hartarska & Nadolnyak, 2007). The sample of this study includes the majority of the MFIs that are categorised as either NBFIs or NGOs which are largely unregulated (as shown in Table 5). Hence it leads to the insignificant relation between debt and social performance, indicating that among Asian MFIs highly leveraged MFIs do not necessarily have high social performance.

Table 5

Frequency Distribution of the Legal Status of MFIs within the Sample

Legal Status	Frequency	Percentage	Cumulative
Bank	140	18.67	18.67
NBFI	330	44.00	62.67
NGO	280	37.33	100.00
Total	750	100	

Contrarily, financial performance is significantly influenced by capital structure decisions. Donation and debt have a significant negative influence on financial performance, while equity has a positive and significant impact on financial performance. Bogan (2012) finds significant negative relation between donation and financial performance which correlates with this study. Donations do not require any return to be paid to the donors, which may have caused less accountability toward the donors and made the MFIs less focused on performance enhancement. Thus, MFIs that rely on donations have a tendency of low financial performance regardless of the level of institutional quality in which they operate. Hence hypothesis 2 (H2) cannot be rejected.

The positive relation between equity and financial performance suggests that when MFIs have Initial Public Offering (IPO) and increase their equity capital, their financial performance rises. This finding is supported by Hartarska & Nadolnyak (2007). Equity investors are more aware and involved within the operation of MFI than donors and hence there is a higher level of accountability. Many of the MFIs within the sample have private equity capital rather than public capital from IPOs. It is a known fact that private equity investors hold the firm more accountable than public investors. The MFI is

expected to provide a return, like any commercial bank, to the equity investors to keep them happy and invested. Hence MFIs pursue higher financial performance when funded with equity. The results show that MFIs operating in either strong or weak institutional quality, but funding their operation with equity, have high financial performance proving that Hypothesis 4 (H4) cannot be rejected.

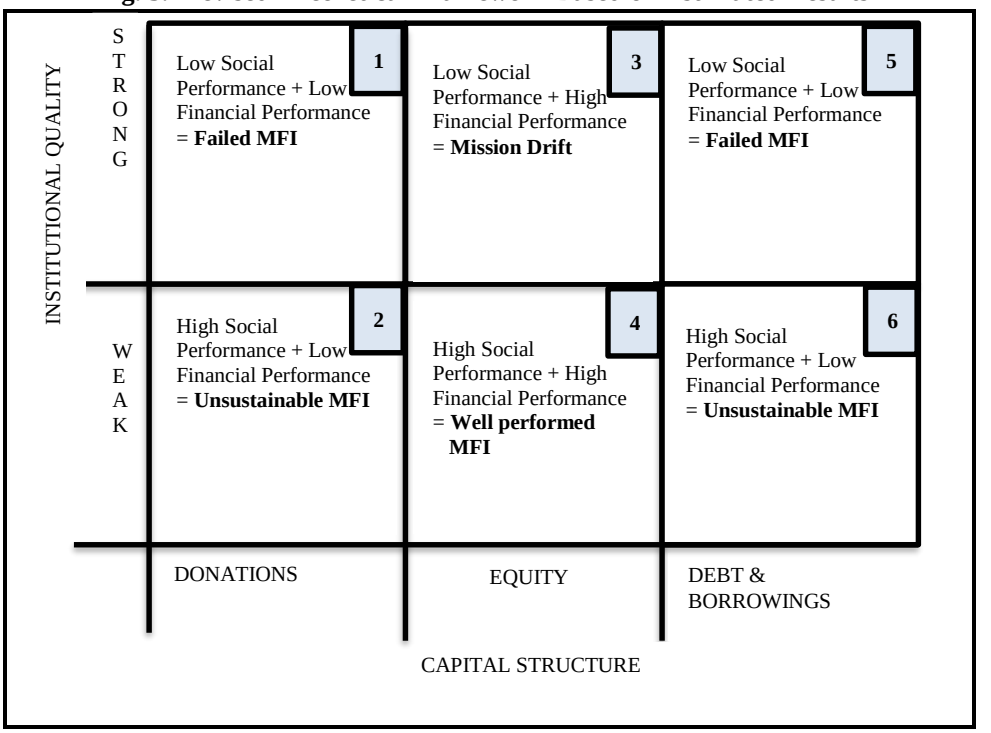
Debt funding shows a significant and negative impact on financial performance, but only at a 10 percent significance level. This is in line with the findings of Bogan (2012) that debt negatively affects financial performance. Lassoued (2021) also finds that debt exhibits a negative effect on earnings management for MFIs. According to Modigliani & Miller's (1958) theory of capital structure, traditional profit-oriented firms get a tax advantage when funded with debt and hence that can increase their financial performance. However, the M&M theory does not apply in the case of MFIs. MFIs get tax exemptions for their not-for-profit status in most Asian countries, thus lacking the tax advantage on leverage. On top of that, the cost of disbursing microloans is high (Cull, Demirgüç-Kunt, & Murdoch, 2009) and debt funding further increases the cost. Hence, debt has no advantage for MFIs that can lead to high financial performance; rather reduces such performance. Although Ndaki, et al. (2018) found a positive association between CEO tenure and debt proportions of MFIs but this is not reflected in the financial performance. Our hypothesis 6 (H6) suggests that financial performance for MFIs that rely on debt depends on institutional quality but our results show otherwise. Hence, MFIs that rely on debt had significantly low financial performance regardless of the level of institutional quality. So, the results indicate that Hypothesis 6 (H6) is rejected.

5.3. Implication of Results

The theoretical framework that is hypothesised in Figure 1 based on the past literature is only partially supported by the estimated results. The revised framework is presented in Figure 3. The results have some important theoretical implications. First, the conventional perception that donation-based MFIs are either failure (in relatively strong institution-based countries) or unsustainable (in relatively weak institution-based countries), and the equity-based MFIs operating in relatively strong institution-based countries are facing mission drift (as they tend to get carried away with a boost in financial performance) is supported by estimated data (Box 1, 2 and 3). Second, the conventional assumption that equity-based MFIs face mission drift even when operating in a weak institutional environment has been rejected (Box 4). The results suggest that equity funding increases financial performance whereas weak institutions increase social performance. Thus, equity-based MFIs operating in countries with relatively weaker institutions, tend to be both financially and socially successful. However, since institutional quality has no statistically significant effect on financial performance, there is no extra boost for financial performance through institutions. Finally, according to the past literature, the perception that debt increases social performance is not supported by the estimated data. The social performance of the Asian MFIs is not found to be significantly influenced by debt; however, debt has a negative impact on financial performance. Together with a strong institutional environment that reduces social performance, debt leads to the notion that MFIs are a failure instead of being

unsustainable (Box 5). A weaker institutional environment, nevertheless, increases the social performance of MFIs. Thus, together with the reduced financial performance due to the debt funding, the country's weaker institutions show the tendency to make the MFI unsustainable instead of being successful (Box 6).

Fig. 3. Revised Theoretical Framework Based on Estimated Results



Overall, MFIs can be well-performed with equity funding when operating in a relatively weak institutional environment. This happens due to higher accountability to the shareholders which forces the firms to enhance the utilisation of capital and to become financially successful, and due to less regulatory burden which enables firms to rely on informal lending and recovery techniques in being socially successful. This result contradicts the Modigliani & Miller's (1958) capital structure theory (MM theory) that firms do better when leveraged with debt funding. The underlying logic of MM theory is that firms can receive tax advantages when leveraging their capital with debt funding. However, most MFIs are tax exempted, thus missing out the advantage of tax benefits. Instead, debt increases costs, leading the MFIs to become financially less successful. The mystery that weaker institutions make MFIs more successful in social performance can be explained by the Market Failure Solution theory of Vanroose & D'Espalliar (2013) that MFIs fill in the gap of financial markets left by commercial banks and thus expand their breadth of outreach. If institutions are relatively weak, commercial lending institutions are too focused on collateral-based loans. Hence, a large gap exists in the market for collateral-free microfinancing. MFIs operate in this gap without facing much competition, and thus can concentrate on enhancing social performance. However, the

stronger the institutional environments, the smaller the space for microfinancing. Thus, MFIs face competition from commercial lending institutions in their lending domain. Such competition lead MFIs to concentrate more on sustainability and drifts away from the focus on social performance. Hence, MFIs prosper in a relationship-based informal environment which is prominent in countries with relatively weaker institutions as suggested by Barry & Tacneng (2014).

The findings have profound managerial implications as well. Instead of funding with donations or debt, MFIs should focus on equity funding. They should have shareholders or partners, not donors or creditors, as investors. This way MFIs can ensure financial sustainability. Most of the profit above the shareholders' dividends should be reinvested to expand and increase the size of the firm since a larger firm size boosts performance. If the MFIs rely more on debt or donation funding, they have the risk of either becoming unsustainable or being a failure. MFIs should seek to operate in countries with weaker institutions and low GDP growth rates to get a wider and deeper outreach leading to higher social performance. If the institutional quality and overall macroeconomic environment of a country improves then it can be assumed that a larger proportion of the population is coming out of poverty and/or becoming eligible to access the commercial banking system. Hence, the market for MFIs shrinks. Thus, it can be reasonably argued that MFIs do better - in terms of financial and social performance—with equity capital and operating in countries where institutions are relatively weaker.

6. CONCLUSION

The first Sustainable Development Goal, suggested by the United Nations, is to remove poverty, and Microfinance Institutions (MFIs) have become major players dedicated to achieving this goal. However, the recent controversies surrounding the MFIs have stemmed from the idea that MFIs cannot simultaneously perform socially and sustain financially. The MFIs may focus on social performance but eventually become financially unsustainable; or they may focus on financial performance and fail to perform socially, thus facing mission drift. Hence MFIS need to have a proper guidelines to maintain both social and financial performance within the environment in that they operate. This paper investigates the issue from the perspective of the capital structure of the MFI, i.e. funding sources; and institutional quality of the country in which the MFI operates. The past literature looked at the issue separately for capital structure or institutional quality. Adusei & Sarpong-Danquah (2021) have found that board gender diversity moderates the relationship between institutional quality and capital structure for MFIs. But our study combines both capital structure (at the firm level) and institutional quality (at the national level) and comes up with a holistic approach to finding the optimal capital structure of MFIs under the influence of the institutional quality of the host country. The results show that capital structure does not affect social performance, i.e., breadth of outreach or depth of outreach, but rather significantly affects financial performance. As opposed to the Modigliani and Miller (1958) theory of capital structure, equity is preferred over debt for socially motivated firms like MFIs. Furthermore, this study finds that institutional quality significantly affects the social performance but not the financial performance of MFIs, implying that both the capital structure decisions and

the institutional quality of the country are equally important for maintaining high social and financial performance. The result of this study is in line with the market failure solution theory of Vanroose & D'Espallier (2013).

The literature on Microfinance is still developing, and this study adds to the vast academic knowledge while opening doors to future developments. A future study that takes MFIs from all regions around the world will help to avoid survivorship biases and enrich the findings. A potential study could also find an accurate measure of social performance through an index created by principal component analysis. This new index can combine both breadth and depth of outreach and give a single value of social performance for an MFI. Such index creation, however, was beyond the capacity of this study.

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Dowry and Female Education: A Theoretical Evaluation

SUSHOBHAN MAHATA, ROHAN KANTI KHAN, and SOUMYAJIT MANDAL

Using a dynamic framework based on intertemporal optimisation, this paper explores the complexity of the intertwined relationship between dowry and female education. The incidence of dowry in a gendered society is not at all a mechanically biological entity but fundamentally socially nurtured. The effect of social heterogeneity, economic status of the bride and groom family, unemployment, and female-specific education subsidy has been analysed to explain the incidence of dowry. We find that specifically targeted subsidised education for the girl child and gender empowerment may aggravate the incidence of dowry. Interestingly, we found that even if dowry is negatively correlated with bride education initially, a rise in the groom's relative status can result in higher dowry and higher bride education in the final equilibrium. The results of this study show that the equilibrium level of dowry and female education exhibits a non-monotonous relationship which hinges on the nature of the underlying socio-economic characteristic. However, overhauling the existing social system is not an easy exercise given the stigma associated with dowry exchange, and thus dowry may persist.

JEL Classification: D11, D14, I20, J12
Keywords: Dowry, Female Education, Gender Wage Disparity, Unemployment, Education Subsidy

1. INTRODUCTION

The practice of dowry as a part of the marriage and family system has evolved as a historical and socio-cultural phenomenon. This has become a standard social norm in most societies, especially in South-Asian countries. As a general convention, the groom's and bride's parents exchange hand-in-hand the dowry payment (in cash or in kind or both) at the time of marriage. This type of payment can be classified into two broad groups. When a payment is made to the groom's family from the bride's family, it is known as the "dowry". On the other hand, when payment is made to the bride's family from the groom's family, it is known as the "bride price". Becker's (1991) price model of dowry suggests that those with a high marginal gain from marriage pay the price as the groom or bride price. In his analysis, the dowry or groom price is derived as the equilibrating price of the joint value of marriage. The custom of dowry dates back to at least 200-800 BCE in the ancient Greek cities-states and Rome, while in the

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contemporary period, its widespread prevalence could be found in India, Bangladesh, Pakistan, Afghanistan, Nepal, and Sri Lanka.[1]

Scholarship in the field of gender studies in general and dowry, in particular, has studied the phenomenon and factors affecting dowry for different cultures and countries. Their results have been broadly mixed and contradictory in a few particular aspects. Botticini and Siow (2003) modelled dowry as an attempt by altruistic parents to mitigate the free-riding problems of family wealth between siblings (daughter and son) when the daughter leaves their parent's home after marriage. Alternatively, dowry is also interpreted as a means to strengthen the bargaining power of the bride in the connubial household (Zhang & Chan, 1999; Brown, 2009, etc.). The existence of the dowry system has also been attributed to antecedents such as tradition, modernisation, self-interest, social status, caste structure of the families, daughters' security, happiness, and timely marriage and marriage squeeze (Anderson, 2007a; Rao, 1993; Dalmia & Lawrence, 2005; Srinivasan & Lee, 2004 & Anderson, 2007b).

Several scholarly attempts have investigated the interrelationship between the practice of dowry and the education of marital partners. Dalmia & Lawrence (2005) found a non-decreasing relationship between the bride's education and the amount of dowry in India. Sharma & Frijters (2009), using an OLS and 2SLS model, obtained a positive association between female education and dowry for middle-class families in the Indian city of Patna. On the other hand, Dasgupta & Mukherjee (2003) and Lahiri & Self (2007) obtained that dowry hinders female skill acquisition. According to Roy (2015), dowry payments can be substituted for higher education in marriage markets if dowry is regarded as a price that clears marriage markets. Education increases the bride's value, therefore, lower dowries are needed to secure the groom of their choice. Krishnaswamy (1995), Makino (2021), and Anukiti, et al. (2018) found that higher female education improves a bride's earning potential in the labour market and leads to a lower amount of dowry exchange at the time of marriage. It has also been obtained that the higher the quality of the groom, the higher the dowry the bride's parent is willing to pay, as it is a claim to take a position on the higher social ladder. It is argued that as parents spend more on their son's education (to make him capable to look after a family), dowry is taken as the reimbursement of the son's education investment (Gierbo & Imam, 2006; Dalmia & Lawrence, 2005). Empirically a significant and positive relationship was obtained between dowry and the education of Indian grooms (Dalmia & Lawrence, 2005; Deolalikar & Rao, 1998). In the Indian context, it was observed that a good appearance is an essential quality for brides, while for grooms, it is the education level (Anderson, 2007a). Using the Indian Human Development Survey-II, Goel and Barua (2021) found that though dowry increases with the groom's education, the rate of increase decreases with the bride's education.

In this paper, we attempt to offer a theoretical explanation focusing on the role of female education in determining the demand for and supply of dowry and the determination of the equilibrium dowry level. The effect of social heterogeneity, economic status of the bride and groom family, unemployment, and female-specific education subsidy has been analysed to explain the incidence of dowry. To illustrate

[1]The detailed historical account about the evolution of dowry system could be found in Anderson (2007a), Botticini and Siow (2003) & Rao (1993).

social heterogeneity, we analyse the attitudes (stigma) associated with dowry exchange for both the bride and groom's families, as well as the preference of the groom's family towards the bride's participation in household chores. Economic status is measured in terms of the initial wealth of the bride's and groom's families, as well as the heterogeneity in earning potential between bride and groom. The paper also shows some counterintuitive results, such as an increase in dowry associated with an increase in female education (Munshi, 2012). We demonstrate this in terms of a special corner solution with high female education and high dowry. Our analysis reconciles the seemingly mixed results obtained in terms of the association between dowry and female education. For example, we show that even if initially dowry is negatively correlated with bride education, the ultimate equilibrium may result in high dowry and high bride education owing to the rise in the relative status of the groom's family.

The remainder of the paper is organised as follows. Section 2 elucidates the basic structure of the model. The equilibrium level of dowry and female education is determined in Section 3. The comparative statics exercise pertaining to our analysis is carried out in Section 4. Finally, Section 5 concludes the paper.

2. THE MODEL

We provide a theoretically tractable framework that demonstrates how parents' decision about the exchange of dowry hinges on the brides' level of education, which is an equilibrium outcome in the marriage market. In this stylised social framework, we consider two heterogeneous groups of families, the bride's and the groom's families, respectively. Each representative family belonging to either group stigmatised by social norms faces an intertemporal utility maximisation problem where the trade-off lies between female education (skill level) that determines her earning potential and dowry.

2.1. The Bride's Family

In this two-period (i=1,2) optimisation framework, the representative bride's family utility is assumed to be a positive function of their household consumption $\{Z_i\}_{i=1}^{2}$ which is discounted by the time impatience factor $\beta \in (0,1)$. Thus, the utility function of the representative bride's family is given by

$$U = \log Z_1 + \beta \log Z_2 \,;\, Z_1, Z_2 > 1; \frac{\partial U}{\partial Z_i} \equiv U_i > 0 \forall i \qquad \ldots \qquad \ldots \qquad \ldots \qquad (1)$$

This is a two-member household, one adult member (guardian) and one daughter, each endowed with one unit of total time. In period 1, the guardian decides on the time allocation of the daughter, a fraction of which is spent either at school acquiring skill (l_F^S) or participating in the unskilled female-specific labour market ($1-l_F^S$).[2] The adult is

[2]The structure of the family could also be interpreted in the following fashion. Let the household has 'n' adult members and 'm' daughters. In that case, either the number of adult members (n) can be normalised to unity, or all adult members assume to have total one unit of time. Similarly, l_F^S can be thought as a fraction of 'm' daughters in a family attending school and $l_F^U \left(=1-l_F^S\right)$ is the fraction of 'm' daughters who are out of school. However, this will add no qualitative insight to the model except for the quantitative changes.

assumed to spend the entire endowment of time in wage-earning activities in period 1 and earns W_0. The family receives a subsidy net of the cost of education for the education of the daughter ($s - b$), where 's' is the rate of education subsidy and 'b' is the direct cost of schooling incurred by the family per unit time spent in skill acquisition. The opportunity cost of schooling of the girl child is $W_F(1-l_F^S)$, where W_F is the unit monetary value of domestic household chores.[3] Besides this, in period 1 the family saves an amount 'S_1' for the consumption of the guardian and payment of dowry in period 2.[4] Thus, in period 1 the household is constrained by the following equation:

$$Z_1 + S_1 = W_0 + W_F - (W_F + b - s)l_F^S \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (2)$$

In period 2, the guardian retires from the regular wage-earning activity and no longer earns any wage income, however, he survives out of his savings net of dowry payment. The daughter becomes an adult (potential bride) in this period and her skill endowment is equivalent to her time spent in schooling in period 1. Hence, her earning potential is $W_F^S l_F^S$ where W_F^S is the female skilled wage rate. The daughter gets married in this period and leaves her parent's home. Any earning by the potential bride in this period is owed to the potential groom's family. The guardian offers 'δ' fraction of the savings as dowry, where δ is conditional on the ratio of potential groom's income to the potential bride's income, defined as $\delta = k\left(\frac{W_M^S}{W_F^S l_F^S}\right), k > 0$.[5] An increase in this ratio implies a higher fraction out of savings is to be paid as dowry.[6] This ratio also represents the relative gender-based income disparity.[7] This implies that an increase in gender-based income disparity deteriorates the relative status of the bride's family that impinge on the amount of dowry offered. The following equation gives the consumption of the parents in period 2:

$$Z_2 = (1 - \delta)\, S_1 \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (3)$$

[3]Webbink, et al. (2012) analysed the time-distribution of girl and boy child in household chores for 16 African and Asian countries. They found that girls are more involved in household work than boys. According to Allais (2009), twice as many girls as boys do household chores for more than 28 hours a week. Similar findings were reported Bonke (2010) and Evans & Skovdal (2015). This is because in many cultures girls' work in household chores is considered as good preparation for their marriage (Huisman & Smits, 2009). Kinship is identified as the other reason behind large participation of girls in household chores (Bass, 2004; Kambhampati & Rajan, 2008).

[4]Here we assume that saving earns no interest and serves in period 2 to allow for consumption and other expenses. The assumption simplifies algebra; however, incorporation of interest income from savings in the presence of perfect credit market will have only quantitative implication and no qualitative variation. There exist another interesting possibility of credit market imperfection and borrowing constraint which has substantial implication for those families who borrow from moneylender to pay for dowry and daughter's education. However, this is beyond the scope of the objective of this paper and is left for future research.

[5]The parameter 'k' is the social stigma in the form of social norms associated with dowry payment by the bride's family under the cover of socio-cultural justification.

[6]'δ' can also be interpreted as willingness to offer dowry by the bride's family.

[7]Alternatively, it can be explained as compensation from the bride's family that will ensure social parity (matching) between the groom and the bride, whenever, $\left(\frac{W_M^S}{W_F^S l_F^S}\right) > 1$.

Thus, the amount of dowry offered by the bride's family is:

$$D_S = \delta S_1 \quad \cdots \quad \cdots \quad \cdots \quad \cdots \quad \cdots \quad \cdots \quad \cdots \quad (4)$$

The family chooses the optimal level of saving that solves the following problem

$$Max,\ U = \log Z_1 + \beta \log Z_2$$
$$\{Z_1, Z_2, S_1\}$$

subject to, $Z_1 + S_1 = W_0 + W_F - (W_F + b - s) l_F^S$

$$Z_2 = (1-\delta) S_1$$
$$l_F^U + l_F^S = 1$$

Optimisation yields the following savings function[8]

$$S_1^* = \frac{\beta}{1+\beta}\left\{W_0 + (s - b - W_F) l_F^S + W_F\right\} \quad \cdots \quad \cdots \quad \cdots \quad \cdots \quad (5)$$

Lemma 1: $S_1^* \geq 0$ in $l_F^{S*} \in (0,1]$ provided $W_0 \geq b - s > 0$.

Thus, substituting Equation (5) in (4) we obtain the dowry supply function that is given by

$$D_S = k \frac{W_M^S}{W_F^S l_F^S}\left(\frac{\beta}{1+\beta}\right)\left\{W_0 + (s - b - W_F) l_F^S + W_F\right\} \quad \cdots \quad \cdots \quad \cdots \quad (6)$$

The dowry supply function has the following properties,

(i) $$\frac{\partial D_S}{\partial l_F^S} = -\frac{k\beta W_M^S (W_0 + W_F)}{(1+\beta) W_F^S (l_F^S)^2} < 0$$

(ii) $$\frac{\partial D_S}{\partial W_F^S} = -\frac{k\beta W_M^S \left\{W_0 + W_F + (s - b - W_F) l_F^S\right\}}{(1+\beta)(W_F^S l_F^S)^2} < 0$$

(iii) $$\frac{\partial D_S}{\partial W_0} = \frac{k\beta W_M^S}{(1+\beta) W_F^S} > 0$$

(iv) $$\frac{\partial D_S}{\partial k} = \frac{\beta W_M^S \left\{W_0 + W_F + (s - b - W_F) l_F^S\right\}}{(1+\beta) W_F^S l_F^S} > 0$$

(v) $$\frac{\partial D_S}{\partial W_M^S} = \frac{k\beta \left\{W_0 + W_F + (s - b - W_F) l_F^S\right\}}{(1+\beta) W_F^S (l_F^S)^2} > 0$$

[8]The second-order sufficient condition is guaranteed by the following

$$\frac{\partial^2 U}{\partial S_1^{\ 2}} = -\left[\frac{1}{\left\{W_0 + W_F - (W_F + b - s) l_F^S - S_1\right\}^2} + \frac{\beta}{S_1^{\ 2}}\right] < 0$$

(vi) $\dfrac{\partial D_S}{\partial W_F} = \dfrac{k\beta W_M^S \left(1-l_F^S\right)}{\left(1+\beta\right) W_F^S l_F^S} > 0$

(vii) $\dfrac{\partial D_S}{\partial s} = \dfrac{k\beta W_M^S}{\left(1+\beta\right) W_F^S} > 0$

The intuition behind the properties (i)–(vi) are elucidated as follows. An increase in the potential bride's skill (education) level or a hike in the female skilled wage rate improves the social status of her family relative to the potential groom's family, thus, they are less willing to offer dowry as compensation towards achieving social parity. A higher level of the bride's guardian (parent) income (W_0) improves the family's economic status. Thus, they could afford to offer a higher amount of dowry, *ceteris paribus*. On the other hand, more stringent social norms associated with dowry payment compel the bride's family to offer more dowry.[9] A higher level of the groom's wage rate (W_M^S) lowers the relative social status of the potential bride's family and leads to a higher amount of dowry offer that could compensate for the loss in the social status of the bride's family relative to the groom's family. Finally, families could accumulate more savings in period 1 if unskilled female child wage (W_F) is high which could be used to finance a higher amount of dowry while she gets married in period 2.

2.2. The Groom's Family

The representative groom's family maximises the intertemporal utility which is a positive function of consumption $\left\{\tilde{Z}_i\right\}_{i=1}^{2}$ discounted by the time impatience factor $\tilde{\beta} \in (0,1)$ and social discount factor $\left(1-\lambda l_F^S\right)$, where $\lambda \in [0,1)$ is the groom family's degree of aversion towards the bride's labour market participation.[10] This is represented by the following utility function:

$$V = \log \tilde{Z}_1 + \tilde{\beta}(1-\lambda l_F^S) \log \tilde{Z}_2 \;\; ; \;\; \tilde{Z}_1, \tilde{Z}_2 > 1 \;\; ; \;\; \frac{\partial V}{\partial \tilde{Z}_i} \equiv V_i > 0 \;\; \forall \, i \quad \cdots \qquad \cdots \qquad (7)$$

In period 1, the guardian spends his entire time (1 unit of time) in wage-earning activities, while the male child is entirely engaged in acquiring skills (education).[11] There is no

[9]It follows from property (iii) and (iv) that economic and social heterogeneity coexist across the bride families, respectively. Families with a higher W_0 has a high economic status relative to those families with a lower W_0. In the similar fashion, a higher value of k implies "bigoted" families compared to "liberal" families with lower value of k.

[10]In the Time Use Survey (TUS), 2019, conducted by the NSSO (MOSPI, Govt. of India) it was found that women spend 300 more minutes on unpaid household chores than men and 480 minutes of women work relative to men are not counted as work and thus remain unpaid (Mitra & Sinha, 2021; Mahata, et al. 2022). This reveals that in such gendered society, females are usually burdened with household tasks unlike their male counterpart. Many cultures do not encourage girls to pursue education because they are expected to grow up to be housewives, which the groom's family values (Huisman & Smits, 2009).

[11]In reference to evidences cited in footnote 11, we simplify the groom's family utility by assuming away the possibility of male child labour.

male-specific education subsidy, however, a cost of education ($Q > 0$) is incurred by the household.[12] Thus, period 1 consumption is determined by the following equation:

$$\tilde{Z}_1 = \tilde{W}_0 - Q \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (8)$$

where, $\tilde{W}_0$ is the income earned by the guardian in period 1. Unlike the bride's family, the groom's family do not save due to the presence of three primary income sources in period 2, i.e., income from a skilled adult male, the bride's income from skilled jobs, and the dowry transfer from the bride's family to the groom's family.[13] In period 2, the guardian retires and earns nothing, while the male child grows up to be an adult member (potential groom) and participates in a skilled wage-earning activity, earning W_M^S . In this period, the potential groom gets married, and the skilled income of the bride ($W_F^S l_F^S$) entirely becomes a part of the groom's family income.[14] The other additional source of income is from the dowry transferred by the bride's family to the groom's family. Thus, this period's consumption is constrained by the following equation

$$\tilde{Z}_2 = Q W_M^S + W_F^S l_F^S + D_d \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (9)$$

The household's demand for dowry is directly proportional to the cost incurred on the potential groom in period 1 which is given by

$$D_d = \vartheta Q \;;\; \vartheta = \gamma \frac{W_M^S}{W_F^S l_F^S} \;;\; \gamma > 0 \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (10)$$

where, γ is the social stigma in the form of social norms associated with the demand for dowry by the groom's family. The household faces a trade-off in terms of the cost component *Q*. An increase in *C* would increase the household's present expenditure, thus, lowering consumption in period 1, however, the proportion of *C* can be recovered in the form of dowry in period 2. Thus, the groom's household's optimisation problem is stated as

$$Max, \quad V = \log \tilde{Z}_1 + \tilde{\beta}(1 - \lambda l_F^S) \log \tilde{Z}_2$$
$$\{\tilde{Z}_1, \tilde{Z}_2, Q\}$$

subject to, $\tilde{Z}_1 = \tilde{W}_0 - Q$

[12]The variable *Q* can be thought as not only representing cost of education, but aggregate of all other cost incurred on the male child such that he can participate in economic activity and possess all other characteristics to get married. Basically, *Q* represents investment in male child to get him a perfect match, otherwise, no girl would like to marry a below average skilled male without desired social characteristics.

[13]In this framework in absence of future uncertainty or interest income, savings is assumed to be necessary rather than precautionary or luxury. Given this assumption the bride's family saves in period 1 to consume in period 2 in absence of any income. On the other hand, the groom's family has multiple sources of income in period 2 to afford consumption, thus savings is not a necessary.

[14]Educated brides are valued more due to her income earning potential besides the advantage of home schooling by mothers as an input in the production of child education as argued by Behrman, et al. (1999). However, in our paper we focus only on the income earning aspect of married female.

$$\tilde{Z}_2 = QW_M^S + W_F^S l_F^S + D_d$$

The solution to the optimisation yields the following dowry demand function[15]

$$D_d = \left(\gamma \frac{W_M^S}{W_F^S l_F^S}\right)\left\{\frac{\tilde{\beta} W_M^S \tilde{W}_0 \left(\gamma + W_F^S l_F^S\right)\left(1-\lambda l_F^S\right) - \left(W_F^S l_F^S\right)^2}{W_M^S \left(1+\tilde{\beta}\left(1-\lambda l_F^S\right)\right)\left(\gamma + W_F^S l_F^S\right)}\right\} \quad \ldots \quad \ldots \quad \ldots \quad (11)$$

The following are the properties of the demand function for dowry.

(viii) $$\frac{\partial D_d}{\partial l_F^S} = \frac{-\gamma\left[\tilde{\beta}^2 W_M^S \tilde{W}_0 \left(\gamma + W_F^S l_F^S\right)^2 \left(1-\lambda l_F^S\right)^2 + \tilde{\beta}\left\{\lambda \left(W_F^S\right)^3 \left(l_F^S\right)^4 + \left(W_F^S l_F^S\right)^2 \left(W_M^S \tilde{W}_0 + \gamma\right)\left(l_F^S\right)^2 + 2\gamma W_M^S \tilde{W}_0 W_F^S l_F^S + \gamma^2 W_M^S \tilde{W}_0\right\} + \gamma\left(W_F^S l_F^S\right)^2\right]}{W_F^S \left(l_F^S\right)^2 \left(\gamma + W_F^S l_F^S\right)^2 \left\{1+\tilde{\beta}\left(1-\lambda l_F^S\right)\right\}^2} < 0$$

(ix) $$\frac{\partial D_d}{\partial W_F^S} = -\left[\frac{\vartheta W_F^S \left(l_F^S\right)^2 \left(2\gamma + W_F^S l_F^S\right)}{W_M^S \left(1+\tilde{\beta}\left(1-\lambda l_F^S\right)\right)\left(\gamma + W_F^S l_F^S\right)^2} + \frac{\gamma W_M^S}{\left(W_F^S\right)^2 l_F^S}\right] < 0$$

(x) $$\frac{\partial D_d}{\partial W_M^S} = \frac{\tilde{\beta}\tilde{W}_0 \gamma\left(1-\lambda l_F^S\right)}{W_F^S l_F^S \left\{1+\tilde{\beta}\left(1-\lambda l_F^S\right)\right\}} > 0$$

(xi) $$\frac{\partial D_d}{\partial \tilde{W}_0} = \frac{\gamma W_M^S \tilde{\beta}\left(1-\lambda l_F^S\right)}{W_F^S l_F^S \left(1+\tilde{\beta}\left(1-\lambda l_F^S\right)\right)} > 0$$

(xii) $$\frac{\partial D_d}{\partial \lambda} = -\frac{\gamma\tilde{\beta}\left\{W_M^S \tilde{W}_0 \left(W_F^S l_F^S + \gamma\right) + \left(W_F^S l_F^S\right)^2\right\}}{W_F^S \left(\gamma + W_F^S l_F^S\right)\left(1+\tilde{\beta}\left(1-\lambda l_F^S\right)\right)^2} < 0$$

(xiii) $$\frac{\partial D_d}{\partial \gamma} = \left[\frac{W_M^S}{W_F^S l_F^S} + \frac{\vartheta\left(W_F^S l_F^S\right)^2}{W_M^S \left\{1+\tilde{\beta}\left(1-\lambda l_F^S\right)\right\}\left(W_F^S l_F^S + \gamma\right)^2}\right] > 0$$

An increase in the bride's level of education (skill) or a higher W_F^S improves the earning potential of the bride, thus consumption in period 2 can be more easily sustained by this increment in the bride's income and the need for dowry to cover the cost now becomes less. On the other hand, a higher level of W_M^S or $\tilde{W}_0$ escalates the demand for dowry owing to an increase in relative status (ϑ) and a rise in investment in the groom (Q) in period 1, respectively. Finally, a higher degree of aversion towards the bride's labour market participation accentuates the social discount factor that shifts the consumption in favour of period 1. Thus, to increase consumption in period 1 the household lowers the expenditure on the groom that lead to a fall in the demand for dowry.[16]

[15]The second-order sufficient condition is guaranteed by the following

$$\frac{\partial^2 V}{\partial Q^2} = -\left\{\frac{1}{\left(\tilde{W}_0 - Q\right)^2} + \frac{\tilde{\beta}\left(1-\lambda l_F^S\right)\left(W_M^S + \frac{\gamma W_M^S}{W_F^S l_F^S}\right)^2}{\left(QW_M^S + W_F^S l_F^S + \frac{\gamma W_M^S Q}{W_F^S l_F^S}\right)^2}\right\} < 0$$

[16]The economic and social heterogeneity for the groom's family follows from the properties (xi)-(xiii). The similar type of heterogeneity has been explained in details in footnote 6 in the context of bride's family.

3. EQUILIBRIUM DOWRY AND BRIDE'S EDUCATION

Let *U'* and *V'* represent the utility of the bride's and groom's families if they remain unmarried, respectively. In this case, the bride's family saves the cost of dowry payment and retains the unmarried girl's income in period 2. On the other hand, this imposes a social humiliation cost (denoted by $\overline{R}$) on the bride's family.[17] In this case, the bride's family will gain a positive pay-off from the marriage of the girl, if *U* is greater than *U*' for a sufficiently higher value of $\overline{R}$. Similarly, *V* > *V*' implies a positive pay-off from marriage for the groom's family.

Definition 1: *Matching between bride and groom is feasible in period 2, if and only if*,

$D_S = D_D = D^*$ *such that* $D^* \in (0, \infty)$ *and* $\overline{R} > (U'-U)$

The equilibrium level of dowry (*D**) and bride's education (l_F^{S*}) are obtained by solving Equations (6) and (11) simultaneously. It follows from Equations (6) and (11) that $\lim(D_S) \to \infty$ as $l_F^S \to 0$ and $\lim(D_D) \to \infty$ as $l_F^S \to 0$, thus, $l_F^{S*} = 0$ cannot be a plausible solution. However, for a sufficiently small value of l_F^S there exist a positive finite equilibrium amount of dowry which is sufficiently large. Thus, the following lemmas are immediate.

***Lemma 2*:** $l_F^{S*} \in (0,1]$ and $D^* \geq 0$ provided the following sufficient condition

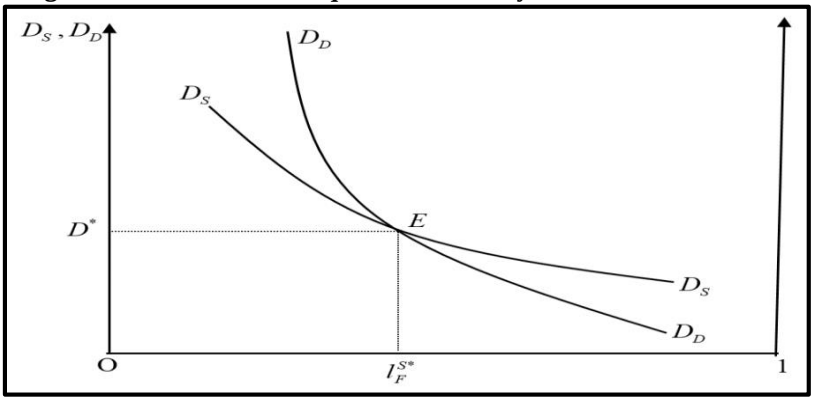
$$W_0 \geq b - s > 0$$

$$\left(W_F^S\right)^2 \geq \tilde{\beta}(1-\lambda) W_M^S \tilde{W}_0 \left(\gamma + W_F^S\right)$$

***Lemma 3*:** $\left|l_F^{S*} - 0\right| < \varepsilon$ for some small $\varepsilon > 0 (\varepsilon \approx 0)$, $D^* >> 0$.

Given Lemma 2 and Lemma 3, we provide a diagrammatic representation of the bride's family's offer of dowry and the groom's family's demand for dowry.

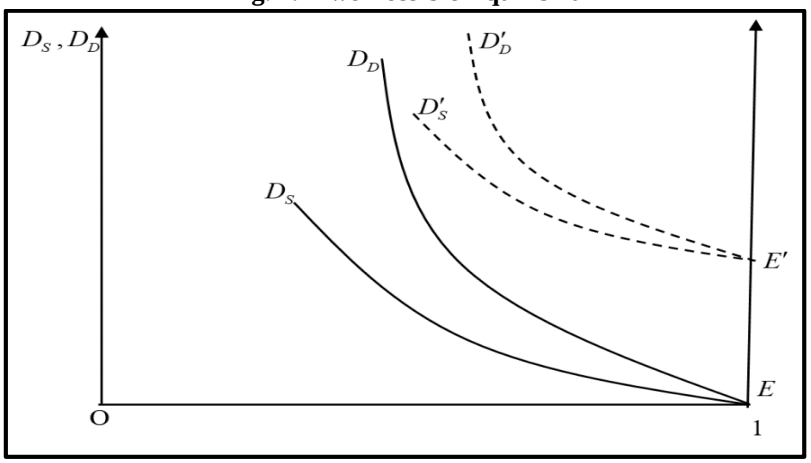
Fig. 1. Determination of Equilibrium Dowry and Bride's Education



[17]In countries like India, families having unmarried girl are stigmised by the society based on traditional social norms which leads to "family shaming". This imposes a social humiliation cost on such families.

Figure (1) plots the relationship between the amount of dowry and the bride's education for the respective bride and groom family using Equations (6) and (11), respectively. Using properties (i) and (vii) we obtain a negatively sloped dowry offer curve (D_SD_S) and dowry demand curve (D_DD_D), respectively. The interior equilibrium is obtained at point E that corresponds to the level of (l_F^{S*}, D^*).[18]

Fig. 2. Two Possible Equilibria



It follows from lemma 2 that there exist two possible extreme cases which are depicted in Figure (2). Equilibrium at point E is a *socially desirable equilibrium* at which the bride possesses the maximum level of education and dowry ceases to exist even though social norms persist. On the other hand, equilibrium at point E' is characterised by a higher level of dowry even if the bride possesses the maximum level of education.

4. COMPARATIVE STATICS

The incidence of dowry and female education can be attributed to socio-cultural factors, economic factors, religious factors, regional factors, and biological factors. This section deals specifically with the socio-cultural factors in terms of heterogeneity in social norms, economic factors in terms of class, gender-wage disparity, and unemployment.

4.1. Socio-cultural Factors

Society's perspective towards the ubiquitous practice of dowry custom is both heterogeneous and inconsistent. Families with a higher inclination towards the exchange

[18] The stability of the equilibrium requires the dowry demand curve (D_DD_D) to be steeper that the dowry offer curve (D_SD_S). The following is the intuitive explanation. The excess demand for dowry is defined as, $ED\left(l_F^S\right) = D_d\left(l_F^S\right) - D_S\left(l_F^S\right)$. For any lower level of $l_F^S\left(< l_F^{S*}\right)$, there exist excess demand for dowry ($ED > 0$) such that l_F^S begins to adjust towards the rightward direction which causes both D_D and D_S to fall. For $ED \to 0$, D_D must fall at a higher rate than D_S [i.e., $\left|\frac{\partial D_d}{\partial l_F^S}\right| > \left|\frac{\partial D_S}{\partial l_F^S}\right|$].

of dowry have a high value of the parameter *k* on the bride's side or a high value of the parameter γ on the groom's side. A high value of *k* (high γ) leads to a higher dowry offer curve (higher dowry demand curve) for some given level of female education.

Fig. 3(a). Heterogeneous Social Norms among the Bride Families

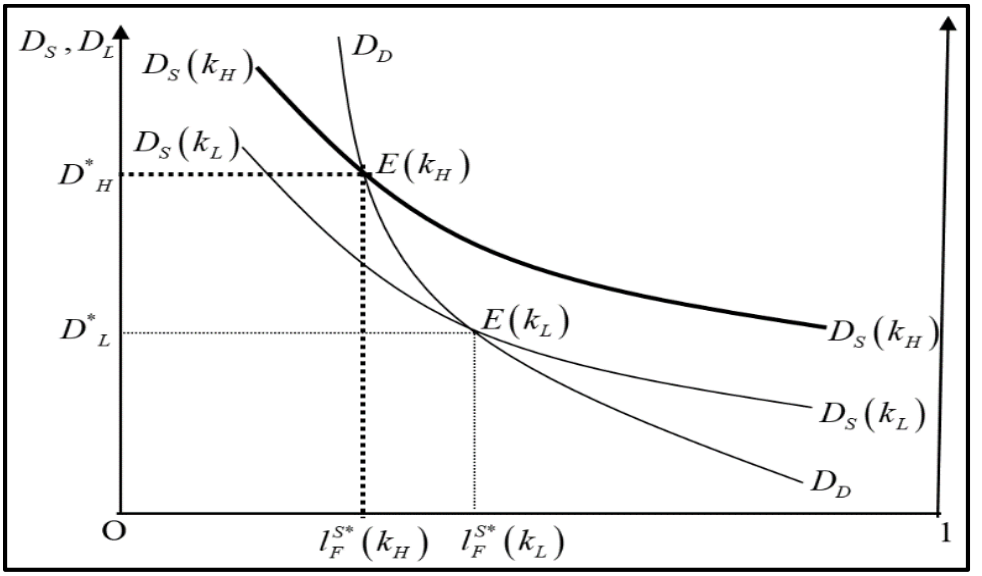
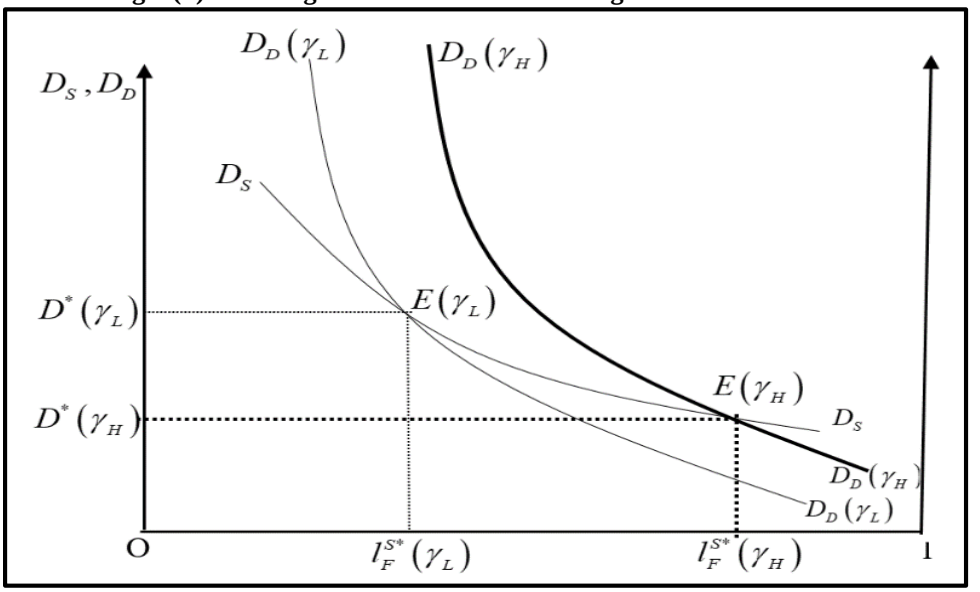


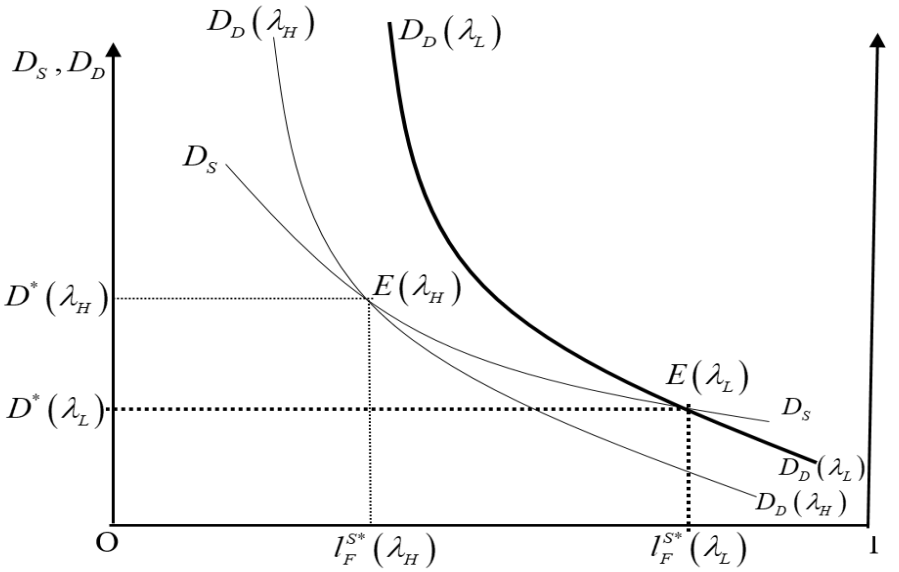
Fig. 3(b). Heterogenous Social Norms among the Groom Families



Bride's family is categorised in terms of $k \in \{k_H, k_L\}$, where $k_H > k_L$ which is represented by the respective dowry offer curve in Figure 3(a). For bigoted families (k_H type) the equilibrium amount of dowry is higher and the level of female education is

lower compared to the liberal families (k_L type). Similarly, the groom's family is categorised in terms of $\gamma \in \{\gamma_H, \gamma_L\}$, where $\gamma_H > \gamma_L$ which is represented by the respective dowry demand curve in Figure 3(b). However, in this case, for the bigoted families (γ_H type) the equilibrium amount of dowry is lower and the level of female education is higher compared to the liberal families (γ_L type). This seemingly counterintuitive result can be explained as follows. The demand for dowry is higher for γ_H type families relative to γ_L type, in response to this excess demand for dowry the bride's family is incentivised to increase the bride's level of education such that the equilibrium converges to a lower amount of dowry$D^*(\gamma_H)$ relative to $D^*(\gamma_L)$.[19]

Fig. 4. Heterogeneity in Aversion Towards Bride's Labour Market Participation among the Groom's Families



The aversion towards the bride's labour market participation skipping the household works is subjectively valued by the groom's family which is the source of heterogeneity that can be observed across different societies or regions. This subjective nature of the groom's family is indexed by the parameter $\lambda \in \{\lambda_H, \lambda_L\}$, where $\lambda_H > \lambda_L$. Figure 4 depicts that conservative families (λ_H) have a lower demand for dowry compared to families with a liberal attitude towards the bride's labour market engagement (λ_L). This leads to a counterproductive outcome in terms of higher (lower) equilibrium amount of dowry (D^* (λ_H) for the former (latter) type and lower (higher) bride's equilibrium level of education, respectively. The following proposition summarises the results.

Proposition 1: *Social heterogeneity in terms of (i) higher k leads to higher equilibrium amount of dowry and lower-level bride's education, (ii) higher γ leads to*

[19] This counterintuitive result is consistent with the stability condition discussed in footnote 11.

lower equilibrium amount of dowry and high level of bride's education, and (iii) higher λ *leads to higher equilibrium amount of dowry and lower-level bride's education.*

4.2. Economic Status and Gender-based Income Disparity

The custom of the dowry varies with the relative economic status of both bride's and groom's families.

Fig. 5(a). Economic Status of the Groom's Family

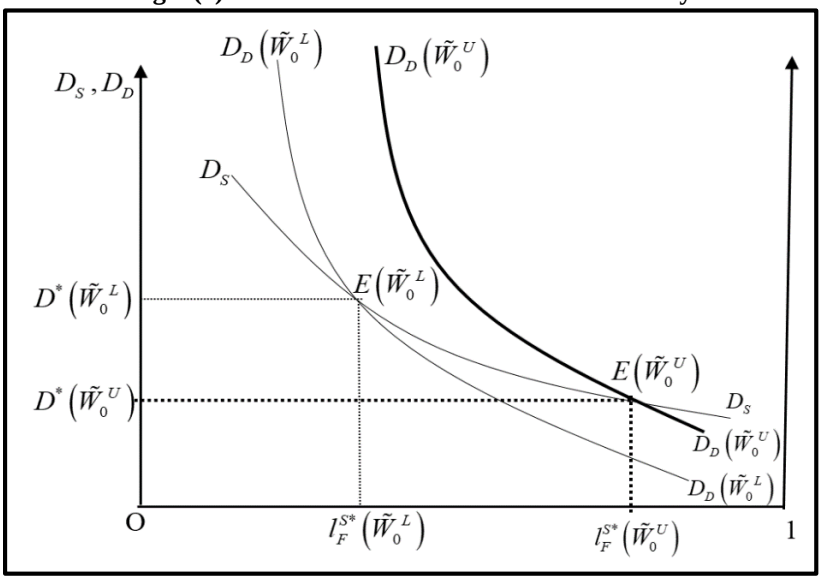
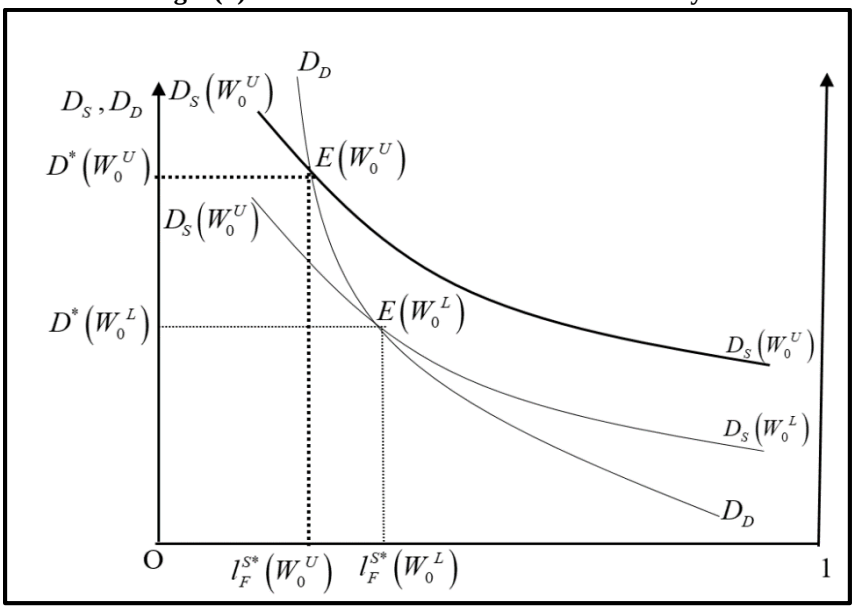
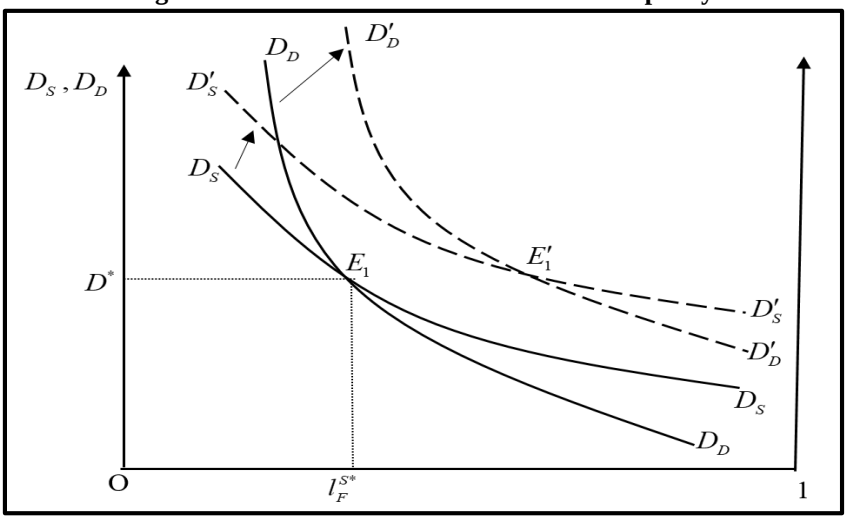


Fig. 5(b). Economic Status of the Bride's Family



It follows from Figure 5 (a) that the equilibrium exchange of dowry is lower while the equilibrium level of bride's education is higher among the groom families with high initial wealth ($\tilde{W}_0^U$) relative to those with a lower level of wealth ($\tilde{W}_0^L$). On the other hand, the high economic status of the bride's family (W_0^U) leads to a higher equilibrium exchange of dowry at a cost of a lower level of the bride's education relative to families belonging to lower economic status (W_0^L). This has been shown in Figure 5 (b).

Fig. 6. Increase in Gender-Based Income Disparity



An increase in W_M^S or a fall in W_F^S widens gender-based income disparity implied by an increase in W_M^S / W_F^S. This causes an escalation (rightward shift) of both dowry demand and dowry offer curve (Figure 6). The change in the equilibrium amount of dowry and the level of the bride's education hinges on the relative magnitude of shift of both D_DD_D and D_SD_S curve. Among several possible equilibria, there exists an equilibrium at which the equilibrium amount of dowry falls and the level of the bride's education improves whenever the shift in D_DD_D curve dominates the shift in D_SD_S curve. The following proposition is immediate.

Proposition 2: *Examining the economic factors, it is obtained that (i) the practice of dowry is higher among the well-off bride's families while it is lower for the groom's families belonging to higher economic class and the equilibrium level of education is lower (higher) for the former (latter), (ii) a higher level of gender-based income disparity may lead to lower equilibrium exchange of dowry while the equilibrium level of bride's education improves under some sufficient conditions.*

4.3. Unemployment

The labour market in developing nations is distorted by the presence of both male and female unemployment. This causes variation in the willingness to offer dowry,

$\delta = k\left(\frac{W_M^S(1-u_M)}{W_F^S l_F^S(1-u_F)}\right)$ and propensity to demand dowry, $\vartheta = \gamma\left(\frac{W_M^S(1-u_M)}{W_F^S l_F^S(1-u_F)}\right)$, where, u_M and u_F is the male and female unemployment rate defined on the interval [0,1], respectively. It also lowers the consumption of the groom's family in period 2 i.e., $Z_2 = CW_M^S(1-u_M) + W_F^S l_F^S(1-u_F) + D_d$.

Thus, optimisation in presence of male and female unemployment yields the following dowry offer and dowry demand, respectively.

$$D_S = k\frac{W_M^S(1-u_M)}{W_F^S l_F^S(1-u_F)}\left(\frac{\beta}{1+\beta}\right)\left\{W_0 + (s-b-W_F)l_F^S + W_F\right\} \quad \cdots \quad \cdots \quad \cdots \quad (12)$$

$$D_d = \frac{\tilde{\beta}\left\{\lambda+\gamma^2+\left(W_F^S(1-u_F)+\gamma\lambda\right)l_F^S\right\}W_M^S\tilde{W}_0(1-u_M) - \left(W_F^S l_F^S(1-u_F)\right)^2}{W_F^S l_F^S(1-u_F)\left(1+\tilde{\beta}\left(1-\lambda l_F^S\right)\right)\left(\gamma + W_F^S l_F^S(1-u_F)\right)} \quad \cdots \quad (13)$$

The additional properties related to unemployment are as follows.

(xiv) $$\frac{\partial D_S}{\partial u_M} = -\frac{k\beta W_M^S\left\{W_0 + W_F + (s-b-W_F)l_F^S\right\}}{W_F^S l_F^S(1+\beta)(1-u_F)} < 0$$

(xv) $$\frac{\partial D_S}{\partial u_F} = \frac{k\beta W_M^S(1-u_M)\left\{W_0 + W_F + (s-b-W_F)l_F^S\right\}}{W_F^S l_F^S(1+\beta)(1-u_F)^2} > 0$$

(xvi) $$\frac{\partial D_d}{\partial u_M} = -\frac{\tilde{\beta}W_M^S\tilde{W}_0\gamma\left(1-\lambda l_F^S\right)}{W_F^S l_F^S(1-u_F)\left\{1+\tilde{\beta}\left(1-\lambda l_F^S\right)\right\}} < 0$$

(xvii) $$\frac{\partial D_d}{\partial u_F} = \left[\frac{\vartheta\left(W_F^S l_F^S\right)^2(1-u_F)\left\{W_F^S l_F^S(1-u_F)+2\gamma\right\}}{W_M^S(1-u_M)\left\{1+\tilde{\beta}\left(1-\lambda l_F^S\right)\right\}\left\{W_F^S l_F^S(1-u_F)+\gamma\right\}^2} + \frac{C\gamma W_M^S(1-u_M)}{W_F^S l_F^S(1-u_F)^2}\right] > 0$$

An increase in male (female) unemployment lowers (elevates) both the willingness to offer dowry by the bride's family and the propensity to demand dowry by the groom's family.

For, u_F, $u_M \in (0,1)$, if $\Delta u_F > 0 > \Delta u_M$ then both the parameters δ and ϑ will be higher that causes a rightward shift in both $D_D D_D$ and $D_S D_S$ curve. The final change in equilibrium values hinges on the relative magnitude of the shift. If the shift in $D_S D_S$ curve dominates the shift in $D_D D_D$ curve, then the equilibrium amount of dowry increases while the effect on the bride's education remains ambiguous. On the other hand, if $\Delta u_M > 0 > \Delta u_F$ then both the parameters δ and ϑ will be higher that causes a leftward shift in both $D_D D_D$ and $D_S D_S$ curve. If the shift in $D_S D_S$ curve dominates the shift in $D_D D_D$ curve, the equilibrium amount of dowry plummets while the effect on the bride's education remains ambiguous.

***Proposition* 3:** *An increase in female (male) unemployment and decrease in male (female) unemployment may inflate (plummets) the equilibrium exchange of dowry while the effect on the bride's level of education remains ambiguous.*

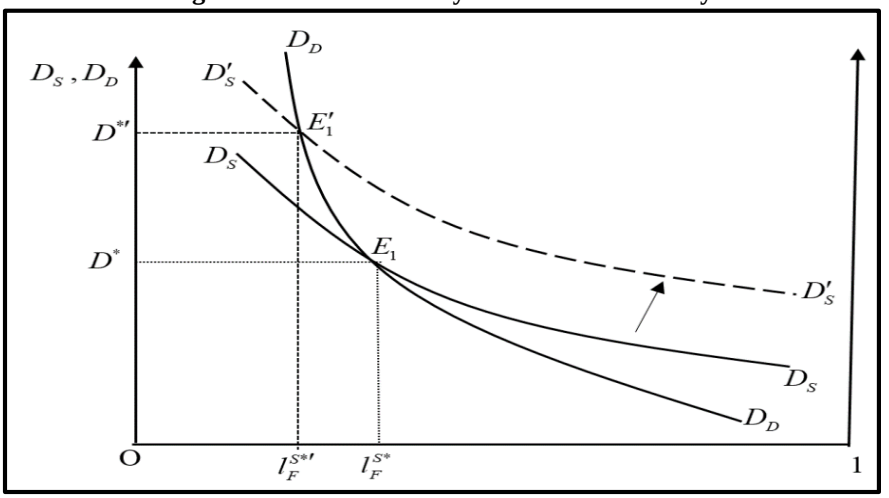
Consider the following extreme possible cases in the labour market: $\{(u_M, u_F)\} = \{(0,1), (1,0), (1,1), (0,0)\}$

First, in the case of full-employment of male and absolute unemployment of female both the D_DD_D and D_SD_S curve becomes vertical such that for any given level of bride's education the equilibrium amount of exchange of dowry could take any positive value provided that both the D_DD_D and D_SD_S curve coincides, or, equilibrium would cease to exist. Second, in the case of full employment of female and absolute unemployment of male, there would be no possible equilibrium since D_S becomes zero and D_D becomes indeterminate. Third, when both males and females are fully unemployed, the solution becomes indeterminate. Finally, the case of full employment of both males and females reduces to the usual case of intermediate equilibrium solution which has already been discussed in the earlier section of the paper.

4.4. Female-specific Education Subsidy Policy

The government in developing nations attempts to employ education subsidies as a policy instrument towards encouraging female education among an economically backward section of society. Conventional wisdom suggests that this policy might have positive influences not only by encouraging female participation in skill acquisition activities but also lowers the incidence of dowry. However, this may turn counterproductive by incentivising the exchange of dowry.[20]

Fig. 7. Education Subsidy to the Bride's Family



[20]In India, there are several central and state level programmes to promote female empowerment in general and incentivise female education in particular. For example, "Sukanya Samriddhi Scheme" (Government of India), "Kishori Shakti Yojana" (Government of Odisha), "Ladli Social Secuirity Allowance" (Government of Haryana), "Kanyashree Prakalpa" (Government of West Bengal), "Bhagyalakshmi Scheme" (Government of Karnataka) and "Rupashree Prakalpa" (Government of West Bengal) etc. among many others. Bride families has the opportunity to divert the amount of cash subsidy towards payment of dowry and other marriage related expenditures. For instance, in the case of "Bhagyalakshmi Scheme" 76.7 percent of beneficiaries used the money for marriage purpose (Prabhu, 2020). Or in the case of "Rupashree Prakalpa" a grant of Rs. 25000 is provided to the economically backward families for marriage expenditures which may aggravate the problem of dowry.

An increase in education subsidy lowers the net opportunity cost of schooling, thus for any given level of the bride's education, the dowry offer curve shifts rightward from $D_S D_S$ to $D'_S D'_S$ (Figure 7) that leads to an increase in the equilibrium amount of dowry exchange and a lower level bride's education. This paradoxical outcome can be offered in the following explanation. The bride's family uses a subsidy in the form of cash to finance the dowry instead of investing in the bride's education or skill acquisition.[21] The following proposition is immediate.

Proposition 4: *Subsidised education for the girl child and specifically targeted programmes for gender empowerment aggravate the incidence of dowry and lower the level of female education.*

5. CONCLUSION

The literature on dowry in general and gender studies, in particular, has constituted the core of analytical study and empirical investigation and has been one of the significant pillars of socio-economic and cultural action for the freedom of women and gender empowerment. However, methodologically this paper is a neo-classical exercise to reflect on the socially reinforcing relation between men and women, post-payment of dowry and marriage. The paper is a question-mongering exercise in the sense that we attempt to explain the incidence of dowry and suggest policy measures in a given socio-cultural context. Given this backdrop, the paper makes an analytical attempt to explore certain economic aspects of the choice of female education and the prevalence of dowry. In so doing, a model based on intertemporal utility maximisation is developed for both the representative bride's and groom's families. The bride's family offers dowry which is conditioned by the bride's skill level, and on the other hand, how the groom's family demands the amount of dowry, which is contingent on the level of expenditure on the groom before reaching his adulthood financed by his guardian (assuming that the net benefit is positive), and what a bride can earn in the labour market. Thus the paper attempts to capture the interface between gender studies and the economics of the labour market.

The effects of various economic policies and implications of socio-cultural norms have been analysed, suggesting many interesting avenues for future research. First, socially conservative bride families are inclined towards higher dowry payment at the time of marriage, which dissuades the bride from skill acquisition. On the other hand, the bride's education is relatively higher when conservative groom families have a high penchant for dowry. This counterintuitive result can be explained due to the bride's family's attempt to bring down the amount of dowry by imparting a high level of education to the daughter. A high inclination of the groom's family towards the bride's household work results in a higher exchange of dowry and a lower level of the bride's education. Second, the practice of dowry is higher among the wealthier bride families while it is lower for the wealthier groom families, and the level of the bride's education is lower (higher) for the former (latter). Second, the effect of gender-based income disparity on the amount of dowry and the bride's level of education remains ambiguous and hinges

[21]In comparison to cash subsidy, a kind subsidy could be more effective to curb the practice of dowry and promote female education. This is because a high transaction cost is associated with the conversion of kind subsidy into cash subsidy.

on the relative strength of demand-supply. Third, an increase in female (male) unemployment may inflate (plummet) the equilibrium exchange of dowry. Finally, it is obtained that subsidised education for the girl child and specifically targeted programme for gender empowerment may aggravate the incidence of dowry.

The model is based on the neoclassical theory of optimisation. Accordingly, the model does not intend to address complex issues of capabilities intertwined with ethnic groups, family structure, and religion. This is one of the main limitations of this paper. However, these issues will give scope for future research.

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Firms and Technology Adoption: The Role of Political Institutions and Market Size

AHMED WAQAR QASIM

The study presents a political economy model and analyses how firms behave towards technology up-gradation given the different dynamics of political and market institutions. The model presented here depicts that political power is controlled by the elite, who formulate trade policy to consolidate power. While the middle-class access the production technology and the labour class provides labour inelastically. The model shows that the technology adoption decision of a firm essentially depends upon the political institutions and the market size of the country. Firms in a country with strong democratic institutions adopt new technology more rapidly. While in a weak democracy, firms successfully persuade the elite policymaker to impose higher trade restrictions and obtain higher protection from technologically advanced foreign firms. Moreover, the model also shows that firms operating in a large market adopt technology more rapidly since a large market has a high price elasticity of demand and supports a large number of larger firms. Furthermore, firms adopt technologies more swiftly when the productivity gains from the adoption are relatively large.

JEL Classification: F12, P16, O38, O33, D72
Keywords: Political Economy, Technological Diffusion, Trade Policy, Rent-seeking, Lobbying

1. INTRODUCTION

Many economists have underlined the importance of political institutions and policies for the adoption of new technologies.[1] At the same time, the decision to adopt new technology is the decision of an individual firm. Therefore, technology adoption in an economy critically depends upon the behaviour of firms towards the adoption.[2] However, there is still a lack of a theoretical framework to analyse, how political institutions impact the behavior of an individual firm toward technology adoption. If new technology makes firms more productive and enhances welfare, then why do firms in some societies resist adopting it? Furthermore, what role the market size can play in the technology adoption decision of a firm? These are the key points that this study seeks to address.

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[1]See, among others, Acemoglu and Robinson (2019), Cervellati, et al. (2018), Acemoglu (2007), Acemoglu and Robinson (2006), Stoneman and Diederen (1994), Stoneman and David (1986), Miyagiwa and Ohno (1995), Parente and Prescott (1994) or Cheng (1987).

[2]For discussion see, Cirera, et al. (2022), Cirera, et al. (2021a), Cirera, et al. (2021b), Cirera, et al. (2020), Ludema and Takeno (2007), Liu, et al. (2001), Comin and Hobijn (2009), Weymouth (2012), or Atkeson and Burstein (2008).

Acemoglu (2007) shows that inefficient institutions generate inefficient policies, and the existence of inefficient institutions is due to the induced preferences of power groups. The development patterns we observed significantly depend upon whether the institutions within a society are extractive or inclusive (Acemoglu & Robinson, 2019). In a society where the elite controls political power, the policy formation always intends either to extract revenue, manipulate factor prices, or consolidate political power. One illustration of power consolidation is the oligarchic society, where power upholding is ensured by having entry barriers and full property rights enforcement. However, these entry barriers cause economic losses in the long run (Acemoglu, 2008). The adoption of new technology could potentially create political losers and contains a political threat to the elite. Thus, the incumbent political power-holding elite erects barriers against technology adoption (Acemoglu & Robinson, 2000). Parente and Prescott (1994) provide empirical evidence that the technology adoption barriers are the primary elements in explaining economic performances on the front of income disparity among countries. Technology adoption in economies with large adoption barriers is slow since firms must make enormous investments for the adoption. Since technology adoption in society rests upon the decision of firms, therefore, in a less competitive environment with huge entry barriers firms do not have any incentive to upgrade the technology (Cerira, et al. 2022). Resultantly, less developed countries are unable to achieve higher productivity, which is the engine of growth. On the other hand, low barriers always encourage technology adoption and diffusion (Amoroso & Martino, 2020). Besides, the technology adoption decision also rests upon the market size. For instance, technology adoption is very responsive to trade openness as trade increases the market size that a firm can serve, Atkeson and Burstein (2008). Therefore, the welfare gains from trade openness originate not only from productivity gains but also from rapid technology adoption by firms.

The purpose of this study is to develop a political economy model with heterogeneous firms at the helm of technology adoption decision-making. The two-country two-factor model assumes that the population is divided into three groups: the elite political power-holding group, the middle-class entrepreneur group, and the labour group. The policy option available to the elite involves only trade policy and the elites devise trade policy to maximise their welfare. The middle class has the access to production technology that involves labour and capital as the factors of production. While the labour class supplies labour inelastically. The model assumes technological differences among countries and one country has superior technology compared to the other. The firms with inferior technology face a critical problem: whether to adopt the superior technology or not. The adoption is costly, and firms must incur a fixed cost of adoption in the form of R&D. On the other hand, the model also assumes that firms can resist the adoption and lobby for higher trade restrictions whereby the foreign importing firms are excluded from the competition in the domestic market.

The contributions of this work to the literature are threefold. First, it develops a political economy model with the production sector comprised of heterogeneous firms as in Melitz (2003).[3] The baseline model considered here specifically elaborates on the trade

[3]Driven by the empirical evidence, Melitz (2003) developed a framework that incorporates firm-level heterogeneity. The model developed by Melitz has a structure closely related to Krugman (1980) except firms are heterogeneous with respect to their productivity level. This model becomes the standard framework in trade literature.

policy formation and how trade policy affects the entry and exit conditions of the firm. Second, the response of technologically backward firms toward trade openness has been explored. As the model assumes a limited set of available varieties, therefore, domestic firm resists trade openness not only on technological inferiority basis but also on an anti-competition basis. Last and most important, the model seeks to characterise the role of the political institution and the market size in the technology adoption decision of a firm.

The theoretical excursion shows that the technology adoption decision of a firm in an economy is contingent upon the market size. Firms in a large market adopt new technology more rapidly than firms in a small market. Moreover, the decision of firms to adopt new technology critically depends upon the political orientation of the country. Since policy-maker selects import tariffs and export taxes as trade policy tools. Therefore, in the case of a weak democracy, where policy-making is not exclusively dependent on political consensus, firms lobby and persuade the elite policymaker to impose a higher import tariff. By having higher protection from foreign technological advance importing firms, domestic firms shield themselves from the competition in a small market. Another important result that emerges from the model is that firms adopt technology when the productivity gain from the adoption is relatively larger and new technology is way much superior to the current technology. This is intuitive in the sense that since technology adoption is costly, firms will not adopt new technology unless the perceived benefits of adoption outweigh the cost of adoption.

1.1. Empirical Motivation

The model presented here is driven by the empiric of the relative performances of the Indian and Pakistani auto sectors. The auto sector in both countries has comparable initial conditions, but the current state of its progress and growth is far asunder.[4] The auto sector of Pakistan represents 16 percent of total manufacturing and contributes merely 2.8 percent to the GDP and provides 200,000 direct employment opportunities (Bari, et al. 2016). While the auto sector embodies 5.27 percent of value-added in total manufacturing in Pakistan, (Qadir, 2016). According to the International Organisation of Motor Vehicle Manufacturers (OICA) data, Pakistan ranked 30th in the world ranking of motor vehicle producers and has the lowest level of motor vehicle production i.e., 1.7 per 1000 people. Furthermore, the market size in Pakistan is small (according to the United Nations, Pakistan ranks 25th in the market size measured by the households' final consumption expenditure) and consumer choice is limited due to high market concentration.

In contrast, the auto sector of India comprises 49 percent of national manufacturing and contributes 7.1 percent to GDP with a growth rate of 14.5 percent during 2019.[5] India is the 4th largest motor vehicle producer and 7th largest commercial vehicle producer in the world.[6] According to the Department for Promotion of Industry and Internal Trade Statistics (DPIIT) India, the auto sector in India has received $21.38 billion in foreign direct investment between 2000-2019. Furthermore, during 2018-19 the Indian auto sector exports 46,29,054 units of automobiles. The table below contains a brief snapshot of the production of the auto sector in both countries.

[4]For a historical review see, Pasha & Ismail (2002) for Pakistan and Tiwari, et al. (2017) for India.

[5]*Source*: IBEF report (2019) "Indian auto industry analysis".

[6]See: https://www.oica.net/category/about-us/members/india/

Table 1

The Production of the Automotive Sector (2020)

	Pakistan		India	
	Production	Domestic Market Share	Production	Domestic Market Share
Cars	94,325	6.22%	3,400,440	13%
Commercial Vehicles	51,713	3.41%	1,054,400	4%
Motorcycles /Three Wheelers	1,370,417	90.36%	21,298,880	80%

Source: For Pakistan "Automotive Manufacturers Association for Pakistan". For India "Brand Equity Foundation for India."[7]

The Indian auto sector has relatively outperformed the Pakistani auto sector in every aspect. The study in hand envisions this outperformance of the Indian auto sector partially due to the existence of a strong democracy and the large market size. The political arena in India features continuous democracy since independence. The continuation of democracy ensures the continuation of development policies, which is crucial to realising the development objectives. While the political history of Pakistan is stained with frequent military coups (1958-1971, 1977-1988, 199-2008), almost half of her political history (36 years out of 74 independent years) was ruled by martial law. These frequent regime changes bring discontinuation of policies and cause dis-alignment with development goals that were once envisioned through political consensus. Furthermore, India also has a large market, which ranks 6th as per the United Nations data on household final consumption expenditures. Therefore, having a weak democracy with a small market size retains the auto sector of Pakistan underdeveloped.

Outwardly the current policies related to the auto sector in both countries are protectionist and India provides the highest effective rate of protection to the auto sector via tariffs among all regional countries, (Bari, et al. 2016). The current auto sector policy of the Indian government is outlined in Automotive Mission Plan 2016-26. The mission plan also ensures policy stability as well as policy predictability and sustainability. While in the case of Pakistan, the Auto Development Policy 2016-21 provides the basic policy guidelines for the auto sector.

By comparing the policy plans of both countries, we can attribute the dismal performance of the Pakistani auto sector to the stability and predictability of the policies. Unfortunately, both vital factors for the development of the auto industry include (i) the business environment, and (ii) reliable trade flow, which is fragmented in Pakistan.[8] The policy plan does not outline any specific policy measure to address these issues. Moreover, policy unpredictability is further aggravated when effective policies vary from the announced policies. One reason for these variations is the Statutory Regulatory Orders (SROs), which are aimed to offer concessions and exemptions during the fiscal year. The drawback of these SROs is that they amend the effective policy rate and do not

[7]For details in the case of Pakistan see https://www.pama.org.pk/annual-sales-production/and in the case of India see: https://www.ibef.org/industry/india-automobiles

[8]For example, in the case of doing business India ranked 63rd and Pakistan ranked 108th out of 190 countries according to the World Bank's ease of doing business report 2020. Similarly, in the case of reliable trade flow, the logistic performance report 2018 of the World Bank ranked India 44th and Pakistan 122nd out of 166 countries.

require a consensus among legislators to be effective. The rampant use of SROs is evident by the fact that there are 103 active SROs related to imports and 29 related to exports in 2022, as per the Federal Board of Revenue of Pakistan.[9] In short, policies in Pakistan are less reliable because the way policymaking is done is less democratic. This policy unreliability creates commitment problems, which is another source of economic inefficiency and is known as the hold-up problem in the literature (see, Acemoglu, 2007).

The rest of the paper is structured as follows. Section 2 presents the basic model and describes the behavior of firms in the economy. Section 3 characterises the close economy equilibrium and discusses capital accumulation in autarky. Section 4 discusses costly trade openness and trade policy formation. Section 5 describes the decision of the individual firm to adopt new technology or block new technology. Section 6 concludes.

2. THE MODEL

The world economy consists of two countries, home country h, and foreign country f. Following Acemoglu (2007), we also assumed that the population in the home country h is divided into three social classes: elite class denoted by e with total agents θ^e, middle-class with total agents θ^m, and labour class with total agents $\theta^l = 1$. The elite controls the political power and makes policy decisions, while the middle class is the entrepreneur and has access to production technology. However, the labour class provides labour inelastically in the economy, and total labour endowment $\bar{\bar{L}}_h(t)$ is normalised to 1 at time t. Individuals in society are unable to change their class/group association over time and the set of elite and middle-class is denoted by S^e and S^m. Moreover, the foreign country is assumed to have superior technology compared to the home country. Therefore, foreign firms are more productive than domestic firms. The superscript i is used to denote individuals or groups and subscript $j \in (h, f)$ indicates the countries.

To begin with, we first assume that technology adoption by firms from the home country is not possible. This simplified version of the model will help us to characterise the equilibrium and to determine the number of firms operating in the country. Later we consider the case of technology adoption and explore the determining factors of technology adoption by firms in the home country.

2.1. Household Sector

The utility of an agent i in home country h at time $t = 0$ is given by:

$$\mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t C_h^i(t) \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (1)$$

where $C_h^i(t)$ is the consumption of agent i and $\mathbb{E}_t$ is the expectations operator that is conditional on the available information at time t. The preferences are Dixit and Stiglitz type and based on the consumption of the finite number of differentiated varieties:

$$C_h^i(t) \equiv \sum_{v \in V} \left(q_h(v,t)^{\frac{\sigma-1}{\sigma}} \right)^{\frac{\sigma}{\sigma-1}} \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (2)$$

[9]For details see: https://www.fbr.gov.pk/ActiveSrosImport

The set of available varieties is represented by V and v represents an individual variety with the elasticity of substitution $\sigma > 1$. Following Yang and Heijdra (1993), we also assume that an individual firm's price-setting behaviour affects the aggregate price index of the economy. This effect emerges because the set of differentiated varieties V is assumed not extremely large, contrary to the assumption in Dixit and Stiglitz (1977). Another outcome of assuming a small set of varieties is that the elasticity of substitution between the differentiated varieties (σ) and the price elasticity of demand (ϵ) are not the same.[10] The solution of utility maximisation of agent i gives the demand of an individual variety at time t, which is:

$$q_h(v,t) = Y_h^i(t) P_h(t)^{\sigma-1} p_h(v,t)^{-\sigma} \quad \dots \quad \dots \quad \dots \quad \dots \quad (3)$$

where $Y_h^i(t)$ denotes the income of an agent i at time t and $P_h^i(t)$ is the aggregate price index at time t that is given as:

$$P_h(t) = \left(\sum_{v \in V} p_h(v,t)^{1-\sigma}\right)^{1/1-\sigma} \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (4)$$

2.2. Production Sector

The production function involves capital and labour as the factors of production. Each firm in the economy produces a unique variety of differentiated goods. The capital is provided by the middle class and labour comes inelastically from the labour class. The production technology at the time t that entrepreneurs can access is:

$$q_h^m(\varphi_h, t) = \varphi_h \left(\left(L_h^m(t)\right)^{\delta} \left(K_h^m(t)\right)^{1-\delta} - f_h \right) \; \forall m \in S^m \text{ at each } t. \quad \dots \quad (5)$$

where φ_h indicates the productivity of the firm, which realises after paying the entry cost f_h^{ent}. In the meanwhile, f_h denotes the fixed cost of production and depends upon the market location. The factor intensity of the fixed and entry costs is assumed to be the same. The share of labour and capital in the production function is given by δ and $(1-\delta)$, respectively. The total capital $\overline{\overline{K}}_h(t)$ at time t depends on the capital stock in period $(t-1)$ and investment along with depreciation rate ψ. The aggregate capital stock at time t in the economy is $\overline{\overline{K}}_h(t) = (1-\psi)\overline{\overline{K}}_h(t-1) + I_h(t-1)$. The conditional demand for labour by an individual firm with the wage rate $w_h(t)$ and the rate of return $r_h(t)$ can be represented as:

$$L_h^m(t) = \left(\frac{q_h(\varphi_h,t)}{\varphi_h} + f_h\right) \left(\frac{\delta}{1-\delta}\right)^{1-\delta} \left(\frac{w_h(t)}{r_h(t)}\right)^{\delta-1} \quad \dots \quad \dots \quad \dots \quad (6)$$

Following Acemoglu (2009), I also assume that the individual heterogeneous firm can employ the maximum $\bar{L}_h$ number of workers and $L_h^m(t) \in [0, \bar{L}_h]$. To ensure no unemployment, further assume that all entrepreneurs employ the same number of workers, so that:

$$L_h^m(t) = L_h^* = \min\left\{\bar{L}_h, \frac{1}{\theta^m}\right\}$$

By assuming $\theta^m \bar{L}_h > 1$, full employment is ensured, and $L_h^* = \frac{1}{\theta^m}$.

[10] Section 2.3 elaborates this point.

2.3. Firm's Behaviour

From the production function, we can derive the cost function of a firm with a productivity level φ_h at time t as:

$$\mathrm{Z}_h(\varphi_h, t) = \left(\frac{q_h(\varphi_h,t)}{\varphi_h} + f_h\right)\mu r_h(t)^{1-\delta} w_h(t)^{\delta}, \text{ with } \mu = \left(\left(\frac{\delta}{1-\delta}\right)^{1-\delta} + \left(\frac{\delta}{1-\delta}\right)^{-\delta}\right) \quad (7)$$

Given the demand for each variety in Equation (3), the optimal pricing rule for the firm is:

$$p_h(\varphi_h, t) = \left(\frac{\epsilon}{\epsilon-1}\right)\frac{1}{\varphi_h}\zeta_h(t), \text{ with } \zeta_h(t) = \mu r_h(t)^{1-\delta} w_h(t)^{\delta} \quad \ldots \quad \ldots \quad (8)$$

where $\left(\frac{\epsilon}{\epsilon-1}\right)$ is the markup of the firm and ϵ is the price elasticity of demand. In Dixit and Stiglitz's (1977) characterisation of monopolistic competition, this price elasticity of demand is equal to the elasticity of substitution between differentiated varieties $\epsilon = \sigma$, while here we have a limited number of varieties, and the price elasticity of demand is given as $\epsilon = \sigma - \frac{(\sigma-1)}{\frac{P_h(t)}{p_h(\varphi_h,t)}} = \sigma - \frac{(\sigma-1)}{V}$. This shows that as the number of differentiated varieties increases the price elasticity of demand also increases because the consumer has more varieties to choose from. The optimal pricing rule also indicates that the price charged by a firm is inversely related to the productivity of the firm. A more productive firm charges a lower price and captures a larger share of the market as the markup is constant for all firms.

The revenue and profit earned by a firm from home country h at time t is given as:

$$R_h(\varphi_h, t) = Y_h^i(t)\, P_h(t)^{\sigma-1}\left(\left(\frac{\epsilon}{\epsilon-1}\right)\frac{1}{\varphi_h}\zeta_h(t)\right)^{1-\sigma} \quad \ldots \quad \ldots \quad \ldots \quad (9)$$

$$\pi_h(\varphi_h, t) = \frac{1}{\epsilon} Y_h^i(t)\, P_h(t)^{\sigma-1}\left(\left(\frac{\epsilon}{\epsilon-1}\right)\frac{1}{\varphi_h}\zeta_h(t)\right)^{1-\sigma} - \zeta_h(t) f_h \quad \ldots \quad \ldots \quad (10)$$

3. CLOSED ECONOMY EQUILIBRIUM

I start with the characterisation of a closed economy equilibrium to explain some simple features of the model. Then in the next section, I will consider the case of costly trade.

3.1. Entry and Exit

Firms realise their productivity after incurring the sunk entry cost $\zeta_h(t) f_h^{ent}$. The productivity is drawn from cumulative distribution $G(\varphi_h)$ and cumulative productivity distribution is assumed to be a Pareto distribution $G(\varphi_h) = 1 - \left(\frac{\underline{\varphi_h}}{\varphi_h}\right)^{\alpha}$ with $\underline{\varphi_h}$ as the lowest possible productivity that a firm can draw in home country h. The firm decides either to produce and serve the market or to exit the market once productivity is realised. In this regard, the minimum productivity level φ_h^*, which is required to produce and remain active in the market, can be determined by a zero-profit condition. The zero-profit condition states as:

$$Y_h^i(t)P_h(t)^{\sigma-1}\left(\left(\frac{\epsilon}{\epsilon-1}\right)\frac{1}{\varphi_h^*}\zeta_h(t)\right)^{1-\sigma} = \epsilon\zeta_h(t)f_{hh} \quad \dots \quad \dots \quad \dots \quad (11)$$

Hence, firms with realised productivity level $\varphi_h < \varphi_h^*$ quit the market and firms with realised productivity $\varphi_h^* \leq \varphi_h$ participate in production and remain active in the market. Meanwhile, the decision of a firm to enter the market and bears the entry cost depends upon the expected revenue that a firm can accrue. The expected revenue of entering the home market with a successful entry is:

$$\bar{R}_h(t) = \int_{\varphi_h^*}^{\infty} R_h(\varphi_h, t)\frac{dG(\varphi)}{1-G(\varphi_h^*)} = \epsilon\chi\zeta_h(t)f_h, \text{ where } \chi = \frac{\alpha}{\alpha-\sigma-1} \quad \dots \quad \dots \quad (12)$$

In the same way, the expected profit would be $\bar{\pi}_h(t) = (\chi-1)\zeta_h(t)f_h$. Next, the free entry condition dictates that the expected ex-ante profit $\bar{\pi}_h(t)$ that include entry cost must be equal to zero in the equilibrium, that is:

$$(\chi-1)f_h{\varphi_h^*}^{-\alpha} = f_h^{ent}\underline{\varphi_h}^{-\alpha} \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (13)$$

In the above condition, the factor reward term $\zeta_h(t)$ has been canceled due to the assumption of the same factor intensity requirement for the fixed overhead production cost and the entry cost. From this condition, we can determine the unique value of φ_h^* that depends only on the parameters of the model. The mass of entrants in the economy is $M_h^{\theta^m}$(which is proportional to the number of workers $L_h^m(t)$) and the mass of active firms in the home country is defined as $M_h = [1-G(\varphi_h^*)]M_h^{\theta^m}$. Given the optimal pricing rule and productivity distribution, we can transform the aggregate price index as:

$$P_h(t)^{1-\sigma} = M_h\left(\frac{\epsilon}{\epsilon-1}\right)^{1-\sigma}\zeta_h(t)^{1-\sigma}\chi{\varphi_h^*}^{\sigma-1} \quad \dots \quad \dots \quad \dots \quad \dots \quad (14)$$

The price index is inversely related to the mass of active firms and the productivity cutoff. While it is positively related to the markup of the firms and factor rewards. Now, the next step in the characterisation of a closed economy equilibrium is to determine the equilibrium factor prices. As the total payments to the factors of production must be equal to the difference between the aggregate revenue and aggregate profit, therefore, the factor's market equilibrium condition is given as:

$$w_h(t) + r_h(t)\bar{\bar{K}}_h^m(t) = \overline{AR}_h(t) - \overline{\Pi}_h(t) + M_h^{\theta^m}f_h^{ent} \quad \dots \quad \dots \quad \dots \quad (15)$$

where $\overline{AR}_h(t) = M_h\bar{R}_h(t)$ and $\overline{\Pi}_h(t) = M_h\bar{\pi}_h(t)$ are the aggregate revenue and profit in the economy at time t. Note that the free entry condition ensures that the aggregate expected profit is equal to the aggregate entry cost, so the above condition becomes: $w_h(t) + r_h(t)\bar{\bar{K}}_h^m(t) = \overline{AR}_h(t)$. From the labour and capital market-clearing conditions, we can determine the equilibrium wage rate and return, which are given as:

$$\begin{aligned} w_h(t) &= \delta\overline{AR}_h(t) = \delta M_h\epsilon\chi\zeta_h(t)f_h \\ r_h(t) &= \frac{(1-\delta)}{\bar{\bar{K}}_h^m(t)}\overline{AR}_h(t) = \frac{(1-\delta)}{\bar{\bar{K}}_h^m(t)}M_h\epsilon\chi\zeta_h(t)f_h \end{aligned} \quad \dots \quad \dots \quad \dots \quad \dots \quad (16)$$

The wage depends positively on the share of labour in the production function, the mass of active firms, and the price elasticity of demand. The positive relationship between the wage rate and the price elasticity of demand is due to the fact that an increase in the varieties leads to an increase in price elasticity. As a result, the firm will

charge a lower markup and earn higher revenue, which generates a demand for wage increments. Accordingly, the mass of active firms is contingent upon the aggregate revenue and the average firm size:

$$M_h = \frac{\overline{AR}_h(t)}{\bar{R}_h} = \frac{w_h(t)+r_h(t)\bar{\bar{K}}_h^m(t)}{\epsilon(\bar{\pi}_h(t)+\zeta_h(t)f_h)} \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (17)$$

3.2. Entrepreneur's Problem

Due to linear preferences, the value of the discounted sum of consumption of the entrepreneur is given as:

$$U_h^m(\{K_h^m(s), L_h^m(s)\}_{s=t}^{\infty}|w(t)) = \sum_{s=t}^{\infty}\beta^{s-t}\left[q_h^m(\varphi_h,t) - \left(K_h^m(s+1) - (1-\psi)K_h^m(s)\right) - w(s)L_h^m(s)\right]$$

The first-order condition of the above maximisation problem gives the capital stock for the next period:

$$\beta\left\{\varphi_h(1-\delta)\left(L_h^m(t+1)\right)^{\delta}\left(K_h^m(t+1)\right)^{-\delta} + (1-\psi)\right\} = 1$$

Or, in capital-labour ratio form:

$$k_h^m(t+1) = \left(\frac{1-\beta(1-\psi)}{\beta\varphi_h(1-\delta)}\right)^{\delta} \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (18)$$

Finally, the equilibrium in the case of a closed economy can be characterised by the zero-profit productivity cutoff, the factor prices, the aggregate price index, and the aggregate revenue $\{\varphi_h^*, P_h(t), \overline{AR}_h(t), w(t), r(t)\}$. These quantities are determined by the free entry condition (Equation 13), the optimal pricing formula (Equation 8), and the factor market clearing condition (Equation 16). Given the distribution of capital stock at time t among the middle-class $[K_h^m(t)]$ and the sequence of capital stock for each entrepreneur by equation (18), we can define all the endogenous variables in the model in terms of $\{\varphi_h^*, P_h(t), \overline{AR}_h(t), w(t), r(t)\}$.

Proposition 1: *The number of varieties that an economy can support is proportional to the market size (in terms of population) and a larger market with a larger number of varieties has a higher price elasticity of demand.*

Following Desmet and Parente (2014), reconsider the labour market clearing condition as:

$$M_h = \frac{w_h\bar{\bar{L}}_h}{\epsilon\delta\chi\zeta_h(t)f_{hh}}$$

While deriving the wage rate in (16), we assumed $\bar{\bar{L}}_h = 1$. The above equation shows that the mass of active firms increases as the labour supply increases. Since each firm produces a single variety of differentiated goods, therefore, the number of varieties also increases. Now, reconsider the price elasticity of demand as, $\epsilon = \sigma - \frac{\sigma-1}{M_h}$, which shows that an increase in the number of active firms will increase the elasticity of demand as well. Thus, a larger economy will have a higher price elasticity. By replacing price elasticity formulae in the above equation, we can present the positive relationship between the labour supply and mass of active firms straightforwardly as:

$$M_h = \frac{w_h\bar{L}_h + \delta\chi\zeta_h(t)f_{hh}(\sigma-1)}{\delta\sigma\chi\zeta_h(t)f_{hh}}$$

Furthermore, the increase in the price elasticity of demand leads to a fall in the markup $\left(\frac{\epsilon}{\epsilon-1}\right)$ of the firm. The optimal pricing rule in Equation (8) indicates a negative relationship between markup and price changed by the firm. Resultantly, the price charged by the firm also reduces and the firm earns more revenue and captures a larger market share. For this reason, a large economy not only holds a larger number of varieties, but the average size of firms is also large.

4. OPEN-ECONOMY EQUILIBRIUM WITH COSTLY TRADE

Now, we consider the case of trade between the home country h and foreign country f and firms from the foreign country are technologically superior to firms from the home country at time t. For the sake of brevity, I assume that the firms from the home country are unable to upgrade technology in this section. This assumption will be relaxed in the next section and we will discuss the implications of technology adoption by firms from the home country there.

Trade among countries involves transport cost and trade taxes. The transport cost is iceberg type and to send one unit of the differentiated good to a foreign market f, the domestic firm ships $\tau_{hf} > 1$ unit of the variety, with $\tau_{hh} = 1$. The trade taxes are defined by the elite policymaker such that the tax $\eta_{fh}(t) = \left(1 + tr_{fh}(t)\right)$ imposes on all imports from the foreign country and the subsidy $\gamma_{hf}(t) = \left(1 + sb_{hf}(t)\right)$ provides to all domestic firms that export to foreign country. Whereas $\eta_{fh}(t) > 1$ indicates an import tariff and $\eta_{fh}(t) < 1$ indicates an import subsidy, while $\gamma_{hf}(t) > 1$ indicates an export subsidy and $\gamma_{hf}(t) < 1$ indicates an export tax. Following Costinot, et al. (2016), we also assume that the elite in the home country h are strategic and impose taxes to maximise their own welfare. Whereas foreign country f is passive and does not impose taxes. In this regard, the trade policy precedes the entry of firms into the economy.

4.1. Trade Policy Making

The policy options available to the elite policymakers in the home country involve only the trade policy and no other tools of taxation are available. The revenue generated from trade taxation at time t is used for the lump-sum transfers to labour-class $T^l(t) \geq 0$, entrepreneurs $T^e(t) \geq 0$, and elite $T^e(t) \geq 0$. The lump-sum transfer assumption also indicates that a negative transfer (lump-sum tax) is not possible. The budget constraint[11] of the government at time t is:

$$\theta^e T^e(t) + \theta^m T^m(t) + T^l(t) \geq \left\{\left(\eta_{fh} - 1\right)\overline{AR}_{fh} + \left(1 - \gamma_{hf}\right)\overline{AR}_{fh}\right\} \quad \ldots \quad (19)$$

The timing of the trade policymaking is such that the elite policymakers announce the import tax $\eta_{fh}(t+1)$ and export subsidy $\gamma_{hf}(t+1)$ that will apply at the next date

[11]Here, we exclude the revenue extraction motives of the policymakers and assume that policymakers have full capacity to raise and redistribute trade tax revenues. For revenue extraction motive of taxation see, Acemoglu (2009).

at time t. Hence, trade policy precedes the decision of entrepreneurs, and they choose the capital stocks for the next period $[k_h^m(t+1)]$ and decide how much labour to hire $[L_h^m(t+1)]$ after observing the announced trade policy for the next period. Since the entrepreneurs are fully informed about the next period's trade policy rates, therefore, the hold-up problem will not be an issue in these settings. Furthermore, let $F^t = \{\eta_{fh}(s), \gamma_{hf}(s), T^l(s), T^m(s), T^e(s)\}_{s=t}^{\infty}$ denotes a feasible sequence of policies.

4.2. Firm's Behaviour

Given the transport cost τ_{hf} and export subsidy $\gamma_{hf}(t)$, the price charged by a firm that belongs to the home country h at the domestic market and the foreign market at time t is given as:

$$\begin{matrix} p_{hh}(\varphi_h,t)=\left(\frac{\epsilon}{\epsilon-1}\right)\frac{1}{\varphi_h}\zeta_h(t) \\ p_{hf}(\varphi_h,t)=\frac{\tau_{hf}}{\gamma_{hf}(t)}\left(\frac{\epsilon}{\epsilon-1}\right)\frac{1}{\varphi_h}\zeta_h(t) \end{matrix} \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (20)$$

Similarly, a foreign importing firm charged price $p_{fh}(\tilde{\varphi}_f, t) = \tau_{fh}\eta_{fh}(t)\left(\frac{\epsilon}{\epsilon-1}\right)\frac{1}{\tilde{\varphi}_f}\zeta_f(t)$ in home country h. Nonetheless, $\tilde{\varphi}_f > \varphi_h$, as foreign importing firms are more productive than domestic firms. Moreover, the revenue and profit of a firm from home country h at time t is:

$$R_h(\varphi_h,t) = \begin{cases} R_{hh}(\varphi_h,t) = Y_h^i(t)P_h(t)^{\sigma-1}\left(\left(\frac{\epsilon}{\epsilon-1}\right)\frac{1}{\varphi_h}\zeta_h(t)\right)^{1-\sigma} & if\ does\ not\ exports \\ R_{hh}(\varphi_h,t)\left(1+{\tau_{hf}}^{1-\sigma}\gamma_{hf}(t)^{\sigma}\frac{Y_f^i(t)}{Y_h^i(t)}\left(\frac{P_f(t)}{P_h(t)^{\sigma-1}}\right)^{\sigma-1}\right) & if\ exports. \end{cases} \quad \dots \quad \dots \quad (21)$$

$$\pi_h(\varphi_h,t) = \begin{cases} \frac{1}{\epsilon}R_{hh}(\varphi_h,t) - f_{hh}\zeta_h(t) & if\ does\ not\ exports \\ \frac{1}{\epsilon}R_{hh}(\varphi_h,t)\left(1+{\tau_{hf}}^{1-\sigma}\gamma_{hf}(t)^{\sigma}\frac{Y_f^i(t)}{Y_h^i(t)}\left(\frac{P_f(t)}{P_h(t)^{\sigma-1}}\right)^{\sigma-1}\right) - (f_{hh}+f_{hf})\zeta_h(t) & if\ exports. \end{cases} \quad \dots \quad (22)$$

where $f_{hh} < f_{hf}$ indicates that the fixed overhead cost of production is higher in the case of serving the foreign market than serving the domestic market. A firm export to the foreign country h at time t only if $\frac{R_{hf}(\varphi_h,t)}{\epsilon} > \zeta_h(t)f_{hf}$, which shows that the revenue accrued in the foreign market must cover the additional fixed cost of production.

4.3. Entry and Exit

Due to costs associated with serving other countries' markets, not all firms active in the domestic market of a country would be able to participate in the export business. Therefore, in the case of costly trade, there are two minimum productivity cutoffs: (i) the productivity cutoff to serve the domestic market only φ_{hh}^* (zero-profit cutoff), and (ii) the productivity cutoff to serve the foreign market as well φ_{hf}^* (export cutoff). Like equation (11), the productivity cutoffs of firms from the home country is determined by the zero-profit conditions and given as:

$$\begin{cases} Y_h^i(t)P_h(t)^{\sigma-1}\left(\left(\frac{\epsilon}{\epsilon-1}\right)\frac{1}{\varphi_{hh}^*}\zeta_h(t)\right)^{1-\sigma} = \epsilon\zeta_h(t)f_{hf} & for\ Domestic\ Market \\ Y_f^i(t)P_f(t)^{\sigma-1}\gamma_{hf}(t)^{\sigma}{\tau_{hf}}^{1-\sigma}\left(\left(\frac{\epsilon}{\epsilon-1}\right)\frac{1}{\varphi_{hf}^*}\zeta_h(t)\right)^{1-\sigma} = \epsilon\zeta_h(t)f_{hf} & for\ foreign\ market. \end{cases} \quad \dots \quad (23)$$

Hence, firms with a productivity level $\varphi_{hh}^{*} \leq \varphi < \varphi_{hf}^{*}$ serve the only domestic market of the home country, and firms with a productivity level $\varphi_{hf}^{*} \geq \varphi$ serve both domestic as well as foreign market. We can also define the zero-profit cutoff $\tilde{\varphi}_{ff}^{*}$ and export cutoff $\tilde{\varphi}_{fh}^{*}$ for foreign firms in the same fashion. Although the foreign country does not pursue any trade policy, due to the presence of transport costs the zero-profit cutoff is less than the export cutoff $\tilde{\varphi}_{ff}^{*} < \tilde{\varphi}_{fh}^{*}$. In a particular market, for instance, the home country's market at time t, domestic firms with minimum productivity φ_{hh}^{*} compete with foreign importing firms with minimum productivity $\tilde{\varphi}_{fh}^{*}$. It is straightforward to show that these two productivity cutoffs in an individual market are inversely related. By considering the ratio of revenues of domestic and foreign importing firms, we have:

$$\varphi_{hh}^{*} = E\tilde{\varphi}_{fh}^{*} \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (24)$$

where $E \equiv -\left(\frac{1-\varsigma}{\varsigma}\right)^{\sigma-1} \eta_{fh}(t)^{-\frac{\sigma}{1-\sigma}} \tau_{fh}$ with ς as the share of expenditure on the domestic varieties out of the total expenditures. The nature of the relationship between productivity cutoffs indicates that in the event of moving from autarky to trade, the zero-profit cutoff φ_{hh}^{*} for domestic firms raises. This rise in zero-profit cutoff makes marginal domestic firms quit the market. Thus, domestic firms especially firms on the margin, prefer higher trade restrictions and that is the import tariff in this model. The proposition below describes the relationship between productivity cutoffs and trade policy.

Proposition 2: *A change in the trade policy of the home country affects the productivity cutoffs in both countries, such that:*

$$\frac{\partial \varphi_{fh}^{*}}{\partial \eta_{fh}(t)}, \frac{\partial \varphi_{hf}^{*}}{\partial \eta_{fh}(t)} > 0 > \frac{\partial \varphi_{ff}^{*}}{\partial \eta_{fh}(t)}, \frac{\partial \varphi_{hh}^{*}}{\partial \eta_{fh}(t)}$$

$$\frac{\partial \varphi_{hf}^{*}}{\partial \gamma_{hf}(t)}, \frac{\partial \varphi_{fh}^{*}}{\partial \gamma_{hf}(t)} < 0 < \frac{\partial \varphi_{ff}^{*}}{\partial \gamma_{hf}(t)}, \frac{\partial \varphi_{hh}^{*}}{\partial \gamma_{hf}(t)}$$

For Proof, see Appendix-A.

The proposition shows that an increase in import tariff by the home country h leads to an increase in import cutoff φ_{fh}^{*} since the import tariff and import cutoff are positively related. This increase in import cutoff makes less foreign importing firms to participate in import business in their home country h. However, due to the trade balance condition, the increase in import cutoff for the home country also increases the export cutoff for domestic firms. Resultantly, a higher trade barrier by the home country leads to a reduction in international trade participation. The same is true in the case of export tax.

The expected revenue of a firm that serves both markets is now:

$$\bar{R}_h(t) = \chi \epsilon \zeta_h(t)\left(f_{hh} + m_{hf} f_{hf}\right)$$

where $m_{hf} = \frac{1-G\left(\varphi_{hf}^{*}\right)}{1-G\left(\varphi_{hh}^{*}\right)} = \left(\frac{\varphi_{hh}^{*}}{\varphi_{hf}^{*}}\right)^{\alpha}$ is the export participation rate. Moreover, the free entry condition again requires that the expected profit to be equal to the entry cost, which states as:

$$(\chi - 1)\left(f_{hh} + m_{hf} f_{hf}\right) {\varphi_{hh}^{*}}^{-\alpha} = f_h^{ent} \underline{\varphi}_h{}^{-\alpha}$$

While the aggregate price index can now transform as:

$$P_h(t)^{1-\sigma} = M_h\left(\frac{\epsilon}{\epsilon-1}\right)^{1-\sigma}\zeta_h(t)^{1-\sigma}\chi{\varphi^*_{hh}}^{\sigma-1} + m_{fh}M_f\left(\frac{\epsilon}{\epsilon-1}\right)^{1-\sigma}\zeta_f(t)^{1-\sigma}{\tau_{fh}}^{1-\sigma}\eta_{fh}(t)^{1-\sigma}\chi{\tilde{\varphi}^*_{fh}}^{\sigma-1} \quad \dots \quad (25)$$

The total factor payment is again determined by Equation (15) and factor prices are determined by the market-clearing conditions. The factor prices are now:

$$\begin{matrix} w_h(t)=\delta M_h\chi\epsilon\zeta_h(t)\left(f_{hh}+m_{hf}f_{hf}\right) \\ r_h(t)=\frac{(1-\delta)}{K_h^m(t)}M_h\chi\epsilon\zeta_h(t)\left(f_{hh}+m_{hf}f_{hf}\right) \end{matrix} \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (26)$$

Finally, the trade balance requires imports of a country must equal to the exports of the country. The trade balance condition for the home country h is given as:

$$\frac{1}{\gamma_{hf}(t)}m_{hf}M_hf_{hf}\zeta_h(t) = m_{fh}M_ff_{fh}\zeta_f(t) \quad \dots \quad \dots \quad \dots \quad \dots \quad (27)$$

Proposition 3*: Firms from the home country resist trade openness due to:*

- *The negative relationship between a firm's markup and the number of varieties available in the market, and*
- *The foreign importing firms are more productive.*
- *However, trade openness increases the welfare of consumers due to the pro-competition effect.*

The proof of the first part of the proposition is in the text above. However, the welfare in the economy after trade enhances due to two effects, as discussed by Edmond, et al. (2012), the pro-competitive effect and the Ricardian effect. The pro-competitive effect captures the effect of a reduction in the aggregate price index due to the fall in the price of domestic varieties. Trade openness increases the number of varieties available in the market and domestic firms are compelled to reduce their markups and reduce prices of domestic varieties. The Ricardian effect encompasses the traditional arguments of welfare increase due to productivity gain.

4.4. Entrepreneur's Problem

The entrepreneur's problem can be described as provided $[k_h^m(t)]$, F^t and $w(t)$ are given at the equilibrium and factor markets are clear, $\{[k_h^m(s+1), L_h^m(s)]\}_{s=t}^{\infty}$ maximises the utility of the entrepreneur, which is:

$$U_h^m(\{K_h^m(s), L_h^m(s)\}_{s=t}^{\infty}|F^t, w(t)) = \sum_{s=t}^{\infty}\beta^{s-t}\left[\left(q_{hf}^m(\varphi_h, t) + \left(1-\gamma_{hf}(s)\right)q_{hf}^m(\varphi_h, t)\right) - \left(K_h^m(s+1) - (1-\psi)K_h^m(s)\right) - w(s)L_h^m(s) + T^m(s)\right]$$

Now, the first-order condition that gives the capital stock for the next period is:

$$\beta\left\{\varphi_{hf}(1-\delta)\left(L_h^m(t+1)\right)^{\delta}\left(K_h^m(t+1)\right)^{-\delta}\left(2-\gamma_{hf}(t+1)\right) + (1-\psi)\right\} = 1 \quad \dots \quad (28)$$

In terms of the capital-labour ratio:

$$k_h^m(t+1) = \left(\frac{1-\beta(1-\psi)}{\beta\varphi_{hf}(1-\delta)\left(2-\gamma_{hf}(t+1)\right)}\right)^{\delta} \quad \dots \quad \dots \quad \dots \quad \dots \quad (29)$$

By comparing the above equation with Equation (18), we can see that in the case of the open economy, the capital level selected by the entrepreneur for the next period depends upon the export tax as well. If $\gamma_{hf}(t+1) < 1$ that is the case of export tax, then the capital stock selected by the entrepreneur for the next period is less than capital stock in the case of autarky. While in the case of export subsidy, $\gamma_{hf}(t+1) > 1$, the capital stock in Equation (25) is higher than the autarky.

4.5. Elite's Problem

The primary objective of trade policymaking by the elite is to keep political power with themselves and maximises their utility by transferring the maximum amount of trade tax revenue to themselves. Acemoglu (2007) rationalises such behavior of the elite on the revenue extraction and political consolidation basis. Resultantly, the elite transfer all revenue to themselves with $\theta^m T^m(t) = 0$ and $T^l(t) = 0$. The consumption function of the elite is given as:

$$C_h^e(t) = \max\{T^e(t)\}$$

The government budget constraint holds in equality:

$$T^e(t) = \frac{1}{\theta^e}\big(\eta_{fh}(t) - 1\big)A\bar{R}_{fh}(t) + \frac{1}{\theta^e}\big(1 - \gamma_{hf}(t)\big)A\bar{R}_{hf}(t)$$

The maximisation problem of the elite can then be written recursively:

$$V_h^e\big(\eta_{fh}(t), \gamma_{hf}(t), [K_h(t)]\big) = \max_{\eta_{fh}(t+1), \gamma(t+1)} \{T^e(t) + \beta V_h^e\big(\eta_{fh}(t+1), \gamma_{hf}(t+1), [K_h(t+1)]\big)\}$$

To characterise the equilibrium trade policy sequence, note that $T^e(t)$ depends only on the trade policy at time t. The utility-maximising tariff and subsidy rates for the elite are given by the first-order conditions:

$$\beta\left(\frac{1}{\theta^e}\big(\eta_{fh}(t+1) - 1\big)\frac{\partial A\bar{R}_{fh}(t+1)}{\partial \eta_{fh}(t+1)} + \frac{1}{\theta^e}A\bar{R}_{fh}(t+1)\right) = 0$$

$$\beta\left(\frac{1}{\theta^e}\big(1 - \gamma_{hf}(t+1)\big)\frac{\partial A\bar{R}_{hf}(t+1)}{\partial \gamma_{hf}(t+1)} + \frac{1}{\theta^e}A\bar{R}_{hf}(t+1)\right) = 0$$

These conditions give (see appendix B):

$$\eta_{fh}(t+1) = \frac{\alpha\sigma}{\alpha\sigma - \sigma + 1} \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (30)$$

$$\gamma_{hf}(t+1) = \frac{\alpha\sigma}{\alpha\sigma + \sigma - 1} \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (31)$$

The equations above indicate that the equilibrium trade policy pair selected by the elite involves an import tariff $\eta_{fh}(t+1) > 1$ an export tax $\gamma_{hf}(t+1) < 1$. Furthermore, the elasticity of substitution between the varieties of differentiated goods and the shape parameter of Pareto distribution are emerged as crucial elements to determine the level of the policy rate. The comparative statistics indicate that:

$$\frac{\partial \eta_{fh}(t+1)}{\partial \alpha} = -\frac{\sigma(\sigma-1)}{(\alpha\sigma - \sigma + 1)^2} < 0, \frac{\partial \eta_{fh}(t+1)}{\partial \sigma} = \frac{\alpha}{(\alpha\sigma - \sigma + 1)^2} > 0$$

$$\frac{\partial \gamma_{hf}(t+1)}{\partial \alpha} = \frac{\sigma(\sigma-1)}{(\alpha\sigma+\sigma-1)^2} > 0, \quad \frac{\partial \gamma_{hf}(t+1)}{\partial \sigma} = -\frac{\alpha}{(\alpha\sigma+\sigma-1)^2} < 0$$

The derivatives in the above equations indicate an opposite relationship between import tariff and export tax with the Pareto shape parameter. The negative relationship between import tariff and the Pareto shape parameter is due to the market selection sensitivity. A large value of α indicates a lower productivity dispersion, which makes heterogeneous firms more sensitive to the variations of import tariffs and market selection. Resultantly, due to the existence of high market selection sensitivity, the elite selects a lower tariff in case of having a high value of α. Similarly, a positive relationship between export tax and Pareto parameter also means a lower ad-valorem export tax in case of having a high value of α, since $\gamma_{hf}(t+1) < 1$.

However, import tariff links positively to the elasticity of substitution between the differentiated varieties. A higher elasticity means domestic varieties are close substitutes for imported varieties. Therefore, applying a higher level of import tariff would not affect consumer welfare ruthlessly. Similarly, having a negative relationship with export tax also shows a higher level of ad-valorem tax in the case of the high value of σ.

The Markov perfect equilibrium (MPE) in the case of the open economy can be characterised by the cutoff productivity, the factor prices, the aggregate price index, and the aggregate revenue, import tariff, and export tax $\{\varphi^*_{hh}, \varphi^*_{hf}, \varphi^*_{ff}, \varphi^*_{fh}, P_h(t), P_f(t), \overline{AR}_h(t), w(t), r(t), \eta_{fh}(t+1), \gamma_{hf}(t+1)\}$. These quantities are determined by the free entry condition (Equation (23)), optimal pricing formula (Equation (20)), and factor market clearing condition (Equation (26)). The sequence of capital stock for each entrepreneur is now determined by Equation (29), import tariff by Equation (30), and export tax by Equation (31).

5. TECHNOLOGY ADOPTION: DECISION TO ADOPT OR RESIST VIA LOBBY FOR TRADE RESTRICTIONS

Now assume the possibility that a firm from the home country can adopt new technology that improves her marginal product by $(1+\lambda)$ factors, which implies that the productivity with new technology is $\tilde{\varphi}_h = \varphi_h(1+\lambda)$. However, the adoption involves a fixed cost Γ which reflects the R&D cost of the adoption. The firm that uses new technology produces with the production function:

$$\tilde{q}_h(\tilde{\varphi}_h, t) = \tilde{\varphi}_h \left(\left(L_h^l(t) \right)^{\delta} \left(K_h^m(t) \right)^{1-\delta} - f_h - \Gamma \right)$$

The price charged by the firm is $\tilde{p}_h(\tilde{\varphi}_h, t) = \left(\frac{\tilde{\epsilon}}{\tilde{\epsilon}-1}\right)\frac{1}{\tilde{\varphi}_h}\zeta_h(t)$, where $\tilde{\epsilon}$ is the price elasticity of demand and in the case of technology adoption by one firm is given as:

$$\tilde{\epsilon} = \sigma - (\sigma-1)\frac{\tilde{p}_{hh}(v,t)}{\left((\mathrm{V}-1)(p_{hh}(v,t))^{1-\sigma} + (\tilde{p}_{hh}(v,t))^{1-\sigma}\right)^{\frac{1}{1-\sigma}}}$$

The revenue and profit accrue by a firm that adopts new technology is:

$$\tilde{R}_h(\tilde{\varphi}_h, t) = \begin{cases} \tilde{R}_{hh}(\tilde{\varphi}_h, t) & if\ does\ not\ exports \\ \tilde{R}_{hh}(\tilde{\varphi}_h, t)\left(1 + {\tau_{hf}}^{1-\sigma}\gamma_{hf}(t)^{\sigma}\frac{Y_f^i(t)}{Y_h^i(t)}\left(\frac{P_f(t)}{P_h(t)^{\sigma-1}}\right)^{\sigma-1}\right) & if\ exports. \end{cases}$$

$$\tilde{\pi}_h(\tilde{\varphi}_h,t)=\begin{cases}\frac{1}{\tilde{\epsilon}}\tilde{R}_{hh}(\tilde{\varphi}_h,t)-(f_{hh}+\Gamma)\zeta_h(t) & if\ does\ not\ exports\\ \frac{1}{\tilde{\epsilon}}\tilde{R}_{hh}(\tilde{\varphi}_h,t)\left(1+{\tau_{hf}}^{1-\sigma}\gamma_{hf}(t)^{\sigma}\frac{Y_f^i(t)}{Y_h^i(t)}\left(\frac{P_f(t)}{P_h(t)^{\sigma-1}}\right)^{\sigma-1}\right)-\left(f_{hh}+f_{hf}+\Gamma\right)\zeta_h(t) & if\ exports.\end{cases}$$

5.1. Entry and Exit

Analogous to zero-profit and export cutoffs, we can also develop a zero-profit condition for the firm to adopt new technology. Firms with productivity above that technology adoption cutoff can adopt new technology in the home country. The technology adoption cutoff is given as:

$$\left\{\begin{array}{ll} Y_h^i(t)P_h(t)^{\sigma-1}\left(\left(\frac{\tilde{\epsilon}}{\tilde{\epsilon}-1}\right)\frac{1}{\tilde{\varphi}_{hh}^*}\zeta_h(t)\right)^{1-\sigma}=\tilde{\epsilon}(f_{hh}+\Gamma)\zeta_h(t) & for\ Domestic\ Market \\ Y_f^i(t)P_f(t)^{\sigma-1}\gamma_{hf}(t)^{\sigma}{\tau_{hf}}^{1-\sigma}\left(\left(\frac{\tilde{\epsilon}}{\tilde{\epsilon}-1}\right)\frac{1}{\tilde{\varphi}_{hf}^*}\zeta_h(t)\right)^{1-\sigma}=\tilde{\epsilon}\left(f_{hh}+f_{hf}+\Gamma\right)\zeta_h(t) & for\ foreign\ market.\end{array}\right\}$$

Firms with a productivity level $\varphi \geq \tilde{\varphi}_h^*$ can adopt new technology and firms with the productivity level $\varphi_h^* \leq \varphi < \tilde{\varphi}_h^*$ are unable to bear the technology adoption cost and keep operating with old technology.

5.2. Selection of Technological Up-gradation

The adoption of an updated technology involves a fixed cost Γ and the fact that $\zeta_h f_h < \zeta_h(f_h+\Gamma)$, ensures that for sufficient low levels of productivity, we have $\tilde{\pi}_h(\tilde{\varphi}_h) < \pi_h(\varphi_h)$, and updating technology is not a viable option when keep operating with old technology is more profitable than adopting new technology, i.e., whenever:

$$\varphi_h^* < \varphi_h < \tilde{\varphi}_h$$

From zero profit condition:

$$\varphi_h^* = \frac{{Y_h^i}^{\sigma-1}}{P_h}\left(\frac{\epsilon}{\epsilon-1}\right)\zeta_h(\epsilon\zeta_h f_{hh})^{\frac{1}{\sigma-1}}$$

$$\tilde{\varphi}_h^* = \frac{{Y_h^i}^{\sigma-1}}{P_h}\left(\frac{\tilde{\epsilon}}{\tilde{\epsilon}-1}\right)\zeta_h\left(\tilde{\epsilon}\zeta_h(f_{hh}+\Gamma)\right)^{\frac{1}{\sigma-1}}$$

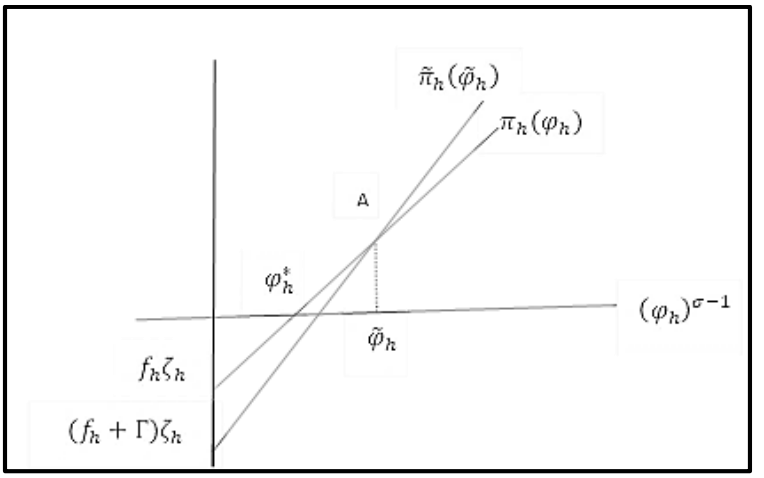
Therefore,

$$\left(\frac{\epsilon}{\tilde{\epsilon}}\left(\frac{\epsilon}{\epsilon-1}\right)^{\sigma-1}-\left(\frac{\tilde{\epsilon}}{\tilde{\epsilon}-1}\right)^{\sigma-1}\right)f_{hh} < \Gamma$$

The above equation indicates that given the cost of technology adoption is greater than the relative benefits (in terms of markup) of technology adoption, firms will not adopt more productive technology. The relative benefits of adopting new technology again link with the price elasticity of demand. In the case of large markets, the relative benefits of adopting new technology will be higher and firms prefer to adopt new technologies. Furthermore, as shown in the figure the profit increase linearly with productivity and more productivity technology increases productivity by $(1+\lambda)$ factor. This means the slope of $\tilde{\pi}(\tilde{\varphi}_h,t)$ is greater than $\pi(\varphi_h,t)$. However, at point A, we have $\pi_h(\varphi_h,t)=\tilde{\pi}_h(\tilde{\varphi}_h,t)$. By utilising the definitions of the profit function and eliminating common terms, we have:

$$\tilde{\varphi}_h = \left(\frac{\zeta_h \Gamma}{\lambda D}\right)^{\frac{1}{\sigma-1}} \text{ with } D = \frac{1}{\epsilon}\left(\frac{\epsilon}{\epsilon-1}\right)^{1-\sigma} Y_h^i \, {P_h}^{\sigma-1} (\zeta_h)^{1-\sigma} \quad \ldots \quad \ldots \quad \ldots \quad (32)$$

where D measures the size of the market. The above equation explicitly shows the critical variables in determining technology adoption in an economy are (i) the cost of adoption, (ii) the market size, and (iii) the level of productivity increment. The cost of technology adoption $\zeta_h \Gamma$ has a positive link technology cutoff. An increase in the cost of technology adoption increases the technology adoption cutoff and fewer firms operating in the home country h enable to adopt new technology. While market size negatively affects technology adoption cutoff. An increase in market size encourages more firms to adopt new technology. As we have seen in proposition 1 that a large market has a large number of varieties and firms. The availability of a large number of varieties in the market makes demand more elastic with respect to price. The high elasticity of demand induces firms to adopt new technology to increase productivity. As the productivity and price charged by the firm are inversely related. Therefore, having higher productivity ensures a lower price for the differentiated variety of firms. Besides, the existence of large firms in a large market also supports rapid technology adoption because large firms can bear the fixed cost of adoption more smoothly than small firms. The last variable that plays a critical role is the factor by which productivity increases after paying adoption costs. We can comprehend this factor straightforwardly with the analogy of rungs of a ladder. If paying adoption costs and adopting new technology leads the firm to a higher rung on the technology ladder, then firms prefer to upgrade technology. However, if adoption leads to the next rung of the ladder and that rung is not far from the rung where the firm is standing, then firms might want to stay on the initial rung and avoid the cost of adoption. Comin and Hobijn (2009) have also shown that technology diffusion is slower when new technology has close predecessors.



Proposition 4: *The technology adoption decision of the firms also depends upon the market size: firms in a large market adopt new technologies more rapidly than firms in a small market.*

Proof, In the text above.

5.3. The Possibility of Block Technology Adoption by Lobbying

Now, consider the possibility of lobbying by heterogeneous firms for trade policy in the home country h. Two fundamental rationales for considering the possibility of lobbying by the firms are markup motivation and anti-competition motivation. Since the markup of firms is dependent upon the number of varieties in the market as discussed in section 2.3. Therefore, lobbying for a higher trade restriction in the form of a higher trade tariff on imports keeps the number of varieties available in the domestic market low. To maintain their markup and shares in the market, lobbying by domestic firms is a natural outcome in these settings. Secondly, in the event of trade openness, the less productive domestic firms must compete with higher productive foreign importing firms in the domestic market. This competition favors foreign importing firms as they charged lower prices. Hence, domestic firms also try to avoid such kind of competition and lobby to place higher trade barriers.

To what extent firms are capable to lobby and influence the elite policymaker in policy selection, rests on the degree of democracy and the size of the total industry of the home country. Firms in a weak democratic country are more prone to lobby for higher regulations, which yields a slow technology diffusion, Comin and Hobijn (2009). While a small industry with a small number of firms is more effective to slow down technology diffusion via lobbying, Bridgman, et al. (2007). In short, firms will not adopt new technology and lobby for trade restrictions when firms are small and there is weak democracy in the economy, Weymouth (2012).

The lobbying mechanism considered here is based on classical Grossman and Helpman (1994), which involves monetary offerings by the firm to the elite policymakers in the form of bribes.[12] The individual firm pays a fixed cost for lobbying $\zeta_h(t)b_h$ and the industry overcomes the free-rider problem by punishing the firm that fails to pay the bribe. Firms in the home country h offer a bribe $B = M_h\zeta_h(t)b_h$ to the elite policymakers at time t to get maximum trade protection from the foreign importing firm at time $t+1$. Elite devises trade policy and receives a bribe in case of implementing policy according to the desire of firms. Acemoglu and Robinson (2006) show that the elite policymaker also intends to block new technology due to incumbency advantage erosion. Hence, the objective function of the elite is now:

$$C_h^e(t) = \max\{T^e(t) + B\}$$

While the firm's objective function is:

$$V_h^m(t) = \max\{\hat{\pi}_h(\varphi_h, t) - \zeta_h(t)b\}$$

Where $\hat{\pi}_h(\varphi_h, t)$ is the operating profit. We can define the equilibrium trade policy and bribe level as:

Lemma-1: *a Markov perfect equilibrium involves* $\{\eta_{fh}^*(t), \gamma_{hf}^*(t)\}$, (B^*) *such that:*

(1) $\zeta_h(t)b^*$ *is feasible for all firms in the home country* h

[12]See, Mitra (1999) for endogenous lobby formation decision of an industry in the classical Grossman & Helpman (1994) protection for sale framework. While Bombardini (2008) introduces the heterogeneity aspect of firms in the analysis and formulates the optimal lobby criterion that regulates the lobby participation decision of firms.

(2) $\{\eta^*_{fh}(t), \gamma^*_{hf}(t)\}$ *maximises* $\{T^e(t) + B\}$ *on* F^t, *given* $\eta^*_{fh}(t), \gamma^*_{hf}(t) \in F^t$

(3) $\{\eta^*_{fh}(t), \gamma^*_{hf}(t)\}$ *maximises*$\{\hat{\pi}_h(\varphi_h, t) - \zeta_h(t)b^* + T^e(t) + B^*\}$ *on* F^t*for every firm*

(4) *For every firm* k *there exists* $F^t_{-k} \in F^t$*that maximises* $\{T^e(t) + B\}$ *on* F^t *such that* $\zeta_h(t)b^*_{-k} = 0$

The first condition places the feasibility restriction on the bribe for each firm in the industry, and condition (2) indicates that the elite maximises their own utility given the amount of bribe offered. The third condition elaborates the fact that the equilibrium policy vector must maximise the joint objective functions and the last condition is about the non-payment of bribes conditional on the policy-level choice of the elite. From condition (3), the first-order conditions are:

$$\begin{matrix} \frac{\partial \hat{\pi}_h(\varphi_h,t)}{\partial \eta^*_{fh}(t)} - \frac{\partial \zeta_h(t)b}{\partial \eta^*_{fh}(t)} + M_h \frac{\partial \zeta_h(t)b}{\partial \eta^*_{fh}(t)} + \frac{\partial T^e(t)}{\partial \eta^*_{fh}(t)} = 0 \\ \frac{\partial \hat{\pi}_h(\varphi_h,t)}{\partial \gamma^*_{hf}(t)} - \frac{\partial \zeta_h(t)b}{\partial \gamma^*_{hf}(t)} + M_h \frac{\partial \zeta_h(t)b}{\partial \gamma^*_{hf}(t)} + \frac{\partial T^e(t)}{\partial \gamma^*_{hf}(t)} = 0 \end{matrix} \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (33)$$

From condition (2), the first-order condition of the elite is:

$$\begin{matrix} M_h \frac{\partial \zeta_h(t)b}{\partial \eta^*_{fh}(t)} + \frac{\partial T^e(t)}{\partial \eta^*_{fh}(t)} = 0 \\ M_h \frac{\partial \zeta_h(t)b}{\partial \gamma^*_{hf}(t)} + \frac{\partial T^e(t)}{\partial \gamma^*_{hf}(t)} = 0 \end{matrix} \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (34)$$

By summing over all firms (33) will become:

$$\begin{matrix} \frac{\partial \hat{\Pi}_h(\varphi_h,t)}{\partial \eta^*_{fh}(t)} = M_h \frac{\partial \zeta_h(t)b}{\partial \eta^*_{fh}(t)} \\ \frac{\partial \hat{\Pi}_h(\varphi_h,t)}{\partial \gamma^*_{hf}(t)} = M_h \frac{\partial \zeta_h(t)b}{\partial \gamma^*_{hf}(t)} \end{matrix} \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (35)$$

Substitute (35) into (34):

$$\begin{matrix} \frac{\partial \hat{\Pi}_h(\varphi_h,t)}{\partial \eta^*_{fh}(t)} + \frac{\partial T^e(t)}{\partial \eta^*_{fh}(t)} = 0 \\ \frac{\partial \hat{\Pi}_h(\varphi_h,t)}{\partial \gamma^*_{hf}(t)} + \frac{\partial T^e(t)}{\partial \gamma^*_{hf}(t)} = 0 \end{matrix}$$

Compared to the first-order conditions of the elite's problem in section 4.5, the first terms of the above equations are not present there. These terms indicate that the trade policy at this political equilibrium differs from section 4.5. Proposition 3 states that an increase in the tariff revenue will lead to a low variety in the market that enables domestic firms to charge higher markup. Accordingly, the change in operating profits of the firms from the home country due to change in the tariff is positive, i.e., $\frac{\partial \hat{\Pi}_h(\varphi_h,t)}{\partial \eta^*_{fh}(t)} = M_h \hat{\pi}_{hh}(\varphi_h, t)\eta^*_{hf}(t)\big((\sigma - 1)\big) > 0$. By denoting the political equilibrium tariff by $\eta^p_{fh}(t)$, we know that $\eta^p_{fh}(t) > \eta_{fh}(t)$. Similarly, $\frac{\partial \hat{\Pi}_h(\varphi_h,t)}{\partial \gamma^*_{hf}(t)} = \frac{M_h \hat{\pi}_{hf}(\varphi_h,t)}{\gamma^*_{hf}(t)}\Big((\sigma - 1) + \frac{\alpha}{\sigma - 1}\Big) > 0$. Therefore, at the political equilibrium $\gamma^p_{hf}(t) > \gamma_{hf}(t)$, which indicates the ad-valorem export tax is lower than in section 4.5.

Proposition 5: *In the case of a small market with weak democracy, the*

heterogeneous firms can influence the trade policy-making and lobby for a higher import restriction to maintain their market shares. However, in the event of large markets with strong democracy where influencing trade policy by lobbying is difficult to achieve, firms refrain from lobbying and adopt new technology more rapidly.

The decision to adopt advanced technology or block technology diffusion via lobby depends upon the relative costs of both in a small market. In the event when the net benefits of lobbying are more than the net benefits of technology adoption, firms will adopt lobbying. The net benefits of lobbying are the difference in operating profit without lobbying and operating profit with lobbying minus the lobby cost. At a firm's level the net benefits are $\{\hat{\pi}_{hf}^{lb}(\varphi_h, t) - \hat{\pi}_{hf}^{wl}(\varphi_h, t) - \zeta_h(t)b_h\}$ where lb and wl in the superscript indicate operating profits with a lobby and without a lobby, respectively. However, the net benefits of adopting new technology are $\{\hat{\pi}_{hf}(\tilde{\varphi}_h, t) - \hat{\pi}_{hf}(\varphi_h, t) - \zeta_h(t)\Gamma\}$. The cost of new technology adoption $\zeta_h(t)\Gamma$ is fixed, while the cost of lobby i.e., the amount of bribe $\zeta_h(t)b_h$ hinges upon how much political power the policy-maker pedals. In weak democracy, the policymaker can change the policy level without facing any strong opposition. Thus, the cost of the lobby will be lower than the cost of the lobby in a strong democracy where policymakers face the backlash of the opposition for the policy decisions. Also, in weak democracy, the institutional mechanism for legislation is not so effective, and bending orders and legislations are easy, for example, the statutory regulatory orders (SRO) that we have discussed in section 1.1. Hence, the cost of technology adoption is much higher than the cost of lobby $\Gamma > b_h$ in a weak democracy. Moreover, the size of firms is also small in small economies, and firms in the small economy might not be able to bear the adoption cost. Resultantly, they are more prone to lobby.

6. DISCUSSION AND CONCLUSION

Technology has been identified as the key factor to promote productivity, which is the engine of growth and prosperity. Countries with updated or new technology are experiencing higher productivity and higher per capita income. While countries lagging in catching up with the technology ug-gradation are also those who are having lower productivity and per capita income. Firms are the main source of technology adoption and therefore technology up-gradation happens through firms. Literature has shown that in developing countries firms are operating at a far distance from the technological frontier. Now the pertinent question is why a large divide among firms on the technological frontier exists even though we have recognised the fact that technology is the key. The study in hand envisioned that this divide exists due to the political and market institutions of the society. In a society where policy-making is not democratic, the firms have less appeal to adopt new technologies since they can seek protection from the competition. While in the event of more democratic policymaking settings, firms cannot exert influence on policymaking and are prone to more competition. Therefore, adopt technology more rapidly. Similarly, if the market size that a firm is serving is large then the firm will adopt new technology swiftly compared to a firm serving a small market without competition. These results emerged from the basic model developed in the study. Another important result that emerges from the model is that firms adopt technology when the productivity gains from adoption are relatively large and new technology is much superior to obsolete technology the firm is using.

Appendices

APPENDIX-A
Proof of Proposition-2

To prove proposition 2, we follow Felbermayr, et al. (2013). From the zero-profit conditions, the relative productivity cutoffs of firms competing in the home country h:

$$\frac{\eta_{fh}{}^{-\sigma}\left(\frac{\varphi_{fh}}{\tau_{fh}}\right)^{\sigma-1}}{(\varphi_{hh})^{\sigma-1}} = \frac{f_{fh}}{f_{hh}}$$

By differentiating after taking the log and holding transport cost constant gives:

$$\left(\frac{\sigma-1}{\sigma}\right)\left(\dot{\varphi}_{fh} - \dot{\varphi}_{hh}\right) = \dot{\eta}_{fh}$$

where the dot above the variable denotes the percentage change in the variable. This expression indicates that any change in tariff rate affects both productivity cutoffs in the market h. The variation in tariff rate is positively related to import cutoff and negatively to domestic cutoff. However, the trade balance condition dictates a positive association between φ^*_{hf} and φ^*_{fh}, which is given by:

$$\varphi^*_{hf} = Q\varphi^*_{fh} \text{ where } Q = \frac{\varphi_h}{\varphi_f}\left(\frac{f_{fh}}{f_{hf}/\gamma_{ij}}\frac{f_h^{ent}}{f_f^{ent}}\right)^{\alpha} > 0$$

So, this positive relationship between both productivity indicates that if the import cutoff of foreign firms to serve market h falls, then the export cutoff for domestic firms to serve foreign market f also falls.

The negative relationship between φ^*_{fh} and φ^*_{hh} is given by Equation (24):

$$\varphi^*_{hh} = E\tilde{\varphi}^*_{fh} \text{ where } E \equiv -\left(\frac{1-\varsigma}{\varsigma}\right)^{\sigma-1}\eta_{fh}^{-\frac{\sigma}{1-\sigma}}\tau_{fh}$$

Therefore, the fall of import cutoff for foreign firms in the home country due to decrease in tariff rate increases the zero-profit cutoff of domestic firms to serve the domestic market. On the other hand, this also decreases import productivity cutoff in foreign country f, which increase domestic productivity cutoff φ^*_{ff}.

Similarly, in the case of export subsidy, the relative productivity cutoffs in the foreign country f lead to:

$$\frac{(\sigma-1)}{\sigma}\left(\dot{\varphi}_{ff} - \dot{\varphi}_{hf}\right) = \dot{\gamma}_{hf}$$

Thus, any change in the export subsidy rate of the home country h affects exporting cutoff negatively and the foreign country's domestic cutoff positively. While we can complete the rest of the analysis for export subsidy by following the above steps.

APPENDIX-B
Derivation of Import tariff and Export Subsidy

From the maximisation problem, the first-order conditions are given as:

$$\frac{\partial V_h^e}{\partial \eta_{hf(t+1)}} = \beta\left(\frac{1}{\theta^e}\left(\eta_{fh}(t+1)-1\right)\frac{\partial A\bar{R}_{fh}(t+1)}{\partial \eta_{fh}(t+1)} + \frac{1}{\theta^e}A\bar{R}_{fh}(t+1)\right) = 0$$

$$\frac{\partial V_h^e}{\partial\, \gamma_{hf(t+1)}} = \beta\left(\frac{1}{\theta^e}\left(1-\gamma_{hf}(t+1)\right)\frac{\partial A\bar{R}_{hf}(t+1)}{\partial \gamma_{hf}(t+1)} + \frac{1}{\theta^e}A\bar{R}_{hf}(t+1)\right) = 0$$

Solving for import tariff and export subsidy yields:

$$\left(\eta_{fh}(t+1)-1\right) = -\frac{A\bar{R}_{fh}(t+1)}{\frac{\partial A\bar{R}_{fh}(t+1)}{\partial \eta_{fh}(t+1)}} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \text{ (B.I)}$$

$$\left(1-\gamma_{hf}(t+1)\right) = -\frac{A\bar{R}_{hf}(t+1)}{\frac{\partial A\bar{R}_{hf}(t+1)}{\partial \gamma_{hf}(t+1)}} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \text{ (B.II)}$$

We can write the aggregate revenues in terms of the parameters of the model explicitly as:

$$A\bar{R}_{fh}(t+1) = M_{fh}^e \chi \underline{\varphi_f}^{\alpha} Y_h^i(t+1)\, P_h(t+1)^{\sigma-1}\left(\frac{\epsilon}{\epsilon-1}\right)^{1-\sigma}\zeta_f(t+1)^{1-\sigma}\tau_{fh}(t+1)^{1-\sigma}\eta_{fh}(t+1)^{-\sigma}{\varphi_{fh}^*}^{\sigma-\alpha-1}$$

$$A\bar{R}_{hf}(t+1) = M_{hf}^e \chi \underline{\varphi_h}^{\alpha} Y_f^i(t+1)\, P_f(t+1)^{\sigma-1}\left(\frac{\epsilon}{\epsilon-1}\right)^{1-\sigma}\zeta_h(t+1)^{1-\sigma}\tau_{hf}(t+1)^{1-\sigma}\gamma_{hf}(t+1)^{\sigma}{\varphi_{hf}^*}^{\sigma-\alpha-1}$$

First, we will solve for import Tariff.

$$\frac{\partial A\bar{R}_{fh}(t+1)}{\partial \eta_{fh}(t+1)} = M_{hf}^e \chi \underline{\varphi_f}^{\alpha} Y_h^i(t+1)\, P_h(t+1)^{\sigma-1}\left(\frac{\epsilon}{\epsilon-1}\right)^{1-\sigma}\zeta_f(t+1)^{1-\sigma}\tau_{fh}(t+1)^{1-\sigma}\eta_{fh}(t+1)^{-\sigma-1}{\varphi_{fh}^*}^{\sigma-\alpha-1}\left(-\sigma+(\sigma-\alpha-1)\frac{\partial ln\varphi_{fh}^*}{\partial ln\eta_{hf(t+1)}}\right)$$ [13]

$$\frac{\partial A\bar{R}_{fh}(t+1)}{\partial \eta_{fh}(t+1)} = M_{hf}^e \chi \underline{\varphi_f}^{\alpha} Y_h^i(t+1)\, P_h(t+1)^{\sigma-1}\left(\frac{\epsilon}{\epsilon-1}\right)^{1-\sigma}\zeta_f(t+1)^{1-\sigma}\tau_{fh}(t+1)^{1-\sigma}\eta_{fh}(t+1)^{-\sigma-1}{\varphi_{fh}^*}^{\sigma-\alpha-1}\left(-\frac{\alpha\sigma}{\sigma-1}\right)$$

$$\left(\eta_{fh}(t+1)-1\right) = -\frac{M_{fh}^e \chi \varphi_f^{\alpha} Y_h^i(t+1)\, P_h(t+1)^{\sigma-1}\left(\frac{\epsilon}{\epsilon-1}\right)^{1-\sigma}\zeta_f(t+1)^{1-\sigma}\tau_{fh}(t+1)^{1-\sigma}\eta_{fh}(t+1)^{-\sigma}{\varphi_{fh}^*}^{\sigma-\alpha-1}}{M_{hf}^e \chi \varphi_f^{\alpha} Y_h^i(t+1)\, P_h(t+1)^{\sigma-1}\left(\frac{\epsilon}{\epsilon-1}\right)^{1-\sigma}\zeta_f(t+1)^{1-\sigma}\tau_{fh}(t+1)^{1-\sigma}\eta_{fh}(t+1)^{-\sigma-1}{\varphi_{fh}^*}^{\sigma-\alpha-1}\left(-\frac{\alpha\sigma}{\sigma-1}\right)}$$

$$\frac{\left(\eta_{fh}(t+1)-1\right)}{\eta_{hf}(t+1)} = \frac{\sigma-1}{\alpha\sigma}$$

$$\eta_{fh}(t+1) = \frac{\alpha\sigma}{\alpha\sigma-\sigma+1}$$

Similarly, we can also solve for export subsidy as:

[13]By considering the mass of importers in the country and the Pareto distribution productivity from zero profit condition.

$$\varphi_{fh}^* = \frac{Y_h^i(t+1)^{\sigma-1}}{P_h(t+1)}\eta_{fh}(t+1)^{\frac{\sigma}{\sigma-1}}\left(\frac{\epsilon}{\epsilon-1}\right)\tau_{fh}(t+1)\zeta_f(t+1)\left(\epsilon\zeta_f(t+1)f_{fh}\right)^{\frac{1}{\sigma-1}}$$

$$\varphi_{hh}^* = \frac{Y_h^i(t+1)^{\sigma-1}}{P_h(t+1)}\left(\frac{\epsilon}{\epsilon-1}\right)\zeta_h(t+1)\left(\sigma\zeta_h(t+1)f_{hh}\right)^{\frac{1}{\sigma-1}}$$

$$\varphi_{fh}^* = \eta_{fh}(t+1)^{\frac{\sigma}{\sigma-1}}\frac{\tau_{fh}(t+1)\zeta_f(t+1)}{\zeta_h(t+1)}\left(\frac{\zeta_f(t+1)f_{fh}}{\zeta_h(t+1)f_{hh}}\right)^{\frac{1}{\sigma-1}}\varphi_{hh}^*$$

$$ln\varphi_{fh}^* = \frac{\sigma}{\sigma-1}ln\eta_{fh}(t+1) + \frac{1}{\sigma-\alpha-1}lnZ$$

$$\frac{\partial ln\varphi_{fh}^*}{\partial ln\eta_{hf}(t+1)} = \frac{\sigma}{\sigma-1}$$

$$\frac{\partial A\tilde{R}_{hf}(t+1)}{\partial \gamma_{hf}(t+1)} = M_{hf}^{e}\chi\underline{\varphi_h}^{\alpha}Y_f^i(t+1)\,P_f(t+1)^{\sigma-1}\left(\frac{\epsilon}{\epsilon-1}\right)^{1-\sigma}\zeta_h(t+1)^{1-\sigma}\tau_{hf}(t+1)^{1-\sigma}\gamma_{hf}(t+1)^{\sigma}{\varphi_{hf}^{*}}^{\sigma-\alpha-1}\left(\sigma+(\sigma-\alpha-1)\frac{\partial ln\varphi_{hf}^{*}}{\partial ln\gamma_{hf}(t+1)}\right)$$ [14]

$$\frac{\partial A\tilde{R}_{hf}(t+1)}{\partial \gamma_{hf}(t+1)} = M_{hf}^{e}\chi\underline{\varphi_h}^{\alpha}Y_f^i(t+1)\,P_f(t+1)^{\sigma-1}\left(\frac{\epsilon}{\epsilon-1}\right)^{1-\sigma}\zeta_h(t+1)^{1-\sigma}\tau_{hf}(t+1)^{1-\sigma}\gamma_{hf}(t+1)^{\sigma}{\varphi_{hf}^{*}}^{\sigma-\alpha-1}\left(-\frac{\alpha\sigma}{\sigma-1}\right)$$

$$\left(1-\gamma_{hf}(t+1)\right) = \frac{M_{hf}^{e}\chi\underline{\varphi_h}^{\alpha}Y_f^i(t+1)\,P_f(t+1)^{\sigma-1}\left(\frac{\epsilon}{\epsilon-1}\right)^{1-\sigma}\zeta_h(t+1)^{1-\sigma}\tau_{hf}(t+1)^{1-\sigma}\gamma_{hf}(t+1)^{\sigma}{\varphi_{hf}^{*}}^{\sigma-\alpha-1}}{M_{hf}^{e}\chi\underline{\varphi_h}^{\alpha}Y_f^i(t+1)\,P_f(t+1)^{\sigma-1}\left(\frac{\epsilon}{\epsilon-1}\right)^{1-\sigma}\zeta_h(t+1)^{1-\sigma}\tau_{hf}(t+1)^{1-\sigma}\gamma_{hf}(t+1)^{\sigma}{\varphi_{hf}^{*}}^{\sigma-\alpha-1}\left(-\frac{\alpha\sigma}{\sigma-1}\right)}$$

$$\frac{\left(1-\gamma_{hf}(t+1)\right)}{\gamma_{hf}(t+1)} = \frac{\sigma-1}{\alpha\sigma}$$

$$\gamma_{hf}(t+1) = \frac{\alpha\sigma}{\alpha\sigma+\sigma-1}$$

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[14] $ln\varphi_{hf}^{*} = -\frac{\sigma}{\sigma-1}ln\gamma_{hf(t+1)} + \frac{1}{\sigma-\alpha-1}lnZ'$

$\frac{\partial ln\varphi_{hf}^{*}}{\partial ln\gamma_{hf}(t+1)} = -\frac{\sigma}{\sigma-1}$

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The Fall of Urdu and the Triumph of English in Pakistan: A Political Economic Analysis

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In this paper, we investigate both how the use of language in higher education in Pakistan has evolved and why the medium of instruction remains a contested terrain. We focus on the struggle between advocates for the use of Urdu and the use of English in higher education. By examining the repeated failed attempts by high political authorities to replace English with Urdu, we demonstrate the usefulness of evolutionary theories of path-dependent institutional change while placing language struggles in the context of national and class stratification.

JEL Classifications: I23, I24, P16, Z13
Keywords: Higher Education, Education and Inequality, Language, Pakistan

INTRODUCTION

Political struggles over language use in education and government have destabilised political orders throughout the world. In Pakistan, disputes have centered on the appropriate medium of instruction in higher education. This paper explores the dynamics of the conflict between advocates of English and Urdu by deploying an institutionalist theory of economic evolution developed by Avner Greif. We argue that despite occasional, formally successful attempts to replace English with Urdu in higher education, these political victories have had minimal effect on the hegemonic use of English in most universities and colleges. This is because of the evolution of underlying 'quasi-parameters' which reinforce the use of English. This gradualist evolutionary perspective leads to our conclusion that the use of English in higher education and the higher reaches of government will strengthen even though only a relatively small minority of the Pakistani population is competent in English. This has important implications for Pakistan's development trajectory and the implementation of inclusive government educational policies which can lessen socio-economic inequality.

This conclusion challenges the argument that the use of English is simply an imperial imposition on the Pakistani population. Where it is no doubt true that the spread of English throughout the world is a product of 19th and early 20th century British colonialism and late 20th and early 21st century American predominance, it does not follow that the Pakistani population would abandon the use of English if somehow the

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political economic influence of the United States declined. We contend that the contemporary preference for English is not a product of coercion but due to changing language preferences within the Pakistani population.

The literature on the political conflicts between advocates of English and advocates of Urdu have largely been descriptive accounts of language struggles motivated by the imperative to forge a unified nation in a multilingual society. While these studies provide invaluable detail, they do not provide a compelling reason for the failure of Urdu to become the medium of instruction in higher education. We need to look at the factors which regulate language preference among those eligible to receive higher education.

This paper cannot provide a definitive answer to this question. It does, however, propose an evolutionary economic framework that can allow the analyst to explore the internal and external which regulate language use. We believe that understanding these factors can explain why the occasional victories of Urdu campaigners for a change of the medium of higher education instruction from English to Urdu are so pyrrhic. Such a framework can also be deployed to understand similar language conflicts in other linguistically diverse nation-states.

This paper is organised into the following sections. Section I presents a schematic outline of conflicts over the medium of educational instruction in higher education along with an account of the evolution of the Pakistani educational system. Section II begins with a literature review of studies of the conflict between English and Urdu and then introduces a Greifian analysis of institutional change which we then apply to the linguistic hegemony of English in Pakistan's higher education system. In this section, we present three hypotheses which identify the underlying factors in Pakistan that regulate language use in higher education. Section III offers a brief conclusion.

I. THE HISTORICAL STRUGGLE OVER LANGUAGE USE IN HIGHER EDUCATION IN PAKISTAN

Pakistan is a multilingual, multicultural society with more than 66 spoken languages (Lewis, et al. 2016). At the time of independence 56 percent of the population spoke Bengali, i.e. the population of then East Pakistan; while the majority language of West Pakistan was Punjabi (67 percent of West Pakistan) followed by Sindhi and Pashto. Only a relatively small minority spoke Urdu. However, Urdu, despite being a minority language, emerged as the proclaimed national language even though English remained the language of official business.[1]

With reference to schooling, Pakistan is characterised by five broad (pre-university) schooling streams using different languages: elite English-medium schools (including military cadet schools), non-elite private English-medium schools catering to the lower-middle and middle-income classes, government-run Urdu-medium schools, public vernacular (mostly Sindhi or Pashto) medium schools, and madrassas (Islamic seminaries) which mainly use Urdu. University education is mostly imparted in English

[1]The present-day linguistic make-up of Pakistan is: Punjabi, 44.15 percent; Pashto, 15.42 percent; Sindhi, 14.10 percent; Siraiki, 10.53 percent; Urdu, 7.57 percent; Balochi, 3.57 percent; Others, 4.66 percent. *Census Report of Pakistan.* Population Census Organisation, Statistics Division, Government of Pakistan. 2001. Table 2–7, p.107.

even though there are university students who have received earlier education in another language and are not very proficient in English. This is a particularly challenging situation.

Although, public, private, and religious schools have existed side-by-side since pre-partition, over the years, especially during the decade of the 1980s and 1990s, both the private sector providing modern secular education and madrassas providing religious education have flourished. This dynamic has further reinforced the tensions in the Pakistani education landscape. From an estimated 150 at the time of Pakistan's independence in 1947, there are now some 32,000 madrassas attended by 2.5 million students (Abbas, 2019). Although the private sector was always a player in Pakistan's education system in the form of missionary and elite schools, their nationalisation in 1972 was a setback for this education sector. Nevertheless, it was in the wake of neoliberal denationalisation in the 1980s that private education made a comeback, and experienced accelerated growth during the 1990s (Andarabi, et al. 2002). Today private schools are no longer an elite phenomenon. Low-fee private schools have emerged in most urban centers and most of them profess to be English-medium although quality remains poor, and the trifurcation of the education sector continues. In today's Pakistan, it is English that opens doors to much coveted jobs in the military and civil service and gives not only a social but also a psychological advantage to those fluent in the language (Phillipson, 1992).

In contrast, Urdu has historically been associated with national religious identity. This occurred even though Indian Muslims spoke a variety of languages including Bengali, Punjabi, Pashto, Sindhi, and Gujrati. Linguistic historians maintain that Urdu is an Indic language which incorporated words from local languages and Sanskrit. Its connections were to India and the local culture, though the script was Perso-Arabic. The Islamisation of the language began in the mid-eighteenth century as Muslim poets purged the language of its Sanskrit elements and replaced Indian/Hindu cultural allusions/metaphors with Iranian imagery and Islamic references. What emerged was highly Persianised Urdu full of Islamic cultural references which served as an identity marker for the educated Muslim elite of Delhi and Lucknow. (See Rahman, 2008 for a detailed discussion.) This, in turn, alienated Hindus and led to the Sanskritisation of Hindi, creating the Urdu-Hindi divide (Brass, 1974).

The association between Urdu and Islam was further cemented during the British era. As Muslim political power shrank, ulema, along with poets and political activists, started writing and publishing pamphlets in Urdu. It became the favoured language for religious debate among Muslim scholars, and, in time, emerged as a repository for Islamic literature (Rahman, 2008).

In contrast, English was originally associated with the assertion of British colonial power. The British colonisers came to the Indian Subcontinent with the objective of resource extraction, which required the imposition of Anglo colonial rule. When British imperial control was established, British rulers replaced Persian with English as the official language in British India during the 19th century (Powell, 2002). They also introduced English as a medium of instruction as they wanted to create a local gentry that would help them administer colonial India. (Rassool, 2007). However, English language education was only made available in major urban schools and higher education institutions while the education of the rest of the locals was imparted either in Urdu or in

vernacular languages. An incentive to join the English-medium schools was the opening of civil service positions for the local population in 1832, 41 years after the 1791 Act of Native Exclusion (Rahman, 2006:30), for which the main selection criteria was competence in English.

The Congress and Muslim league leadership emerged from these English-medium schools. Jinnah, in his freedom movement, used the English-educated bureaucracy, military, and judiciary, which had originally been in the service of the British Raj. This led Hamza Alavi to dub the newly formed state of Pakistan "a vice-regal" state – a state that continued to be ruled by the "Salariat" in power: the military, bureaucratic, and landed elite that continued its colonial administrative practices (Alavi, 1972). Jinnah in using these very intermediaries in his struggle for the Muslim national movement had made these social structures even more strongly embedded in what emerged as the state of Pakistan (Nasr, 2001). It is not surprising that these English-educated agents/actors opted for English as the language of official state business, as this had been the language of business in colonial India.

At the time of independence, Pakistan, like many other ex-colonial countries, was faced with the problem of developing a language policy in a multilingual society. As in many new countries, formulating an appropriate policy was complicated by different language groups competing for recognition and status. The nation's founders, as mentioned above, were themselves trained in English. The military, judiciary, and civil service were Anglicised institutions, and the people working within them wanted to continue state business in English, but they also wanted to unite an ethnically diverse population under the umbrella of a national language. Thus, the early leaders of Pakistan tried to both maintain English while creating a symbolic national language which might eventually become the dominant language of the population. Jinnah himself made forceful speeches in favour of Urdu as Pakistan's emerging national language.

Given the ambiguity of Pakistan's language policy, the role of medium instruction in higher education became politically fraught. If the educated elite continued to be instructed in English, then this would only strengthen the role of the English elite and make it difficult for Urdu to transform itself from a designated national language to an actual national language. The importance of this issue was recognised by educational authorities almost immediately after independence. When the Advisory Board of Education held its first meeting in 1948, it resolved that the mother tongue should be the medium of instruction at the primary stage. Moreover, it also recommended that English be replaced by Urdu in the universities (ABE, 1949), while secondary education should be in Urdu (ABE, 1955). As a result, a number of institutions were established to do basic work in Urdu, from coining new terms to translations, to developing new tools and techniques to expedite its adoption as an official language (Rahman, 1997: 233).

Since this first conference on education in 1948, the basic contradictions of language in education policy have remained constant and the general theme of the elite response has been to obfuscate the language conflict by promising change but not delivering it. English, especially for higher education, is justified by the state, in the interest of modernisation because it is the language of science and technology. On the other hand, Urdu is justified in the interest of Pakistani national unification. The documents kept insisting that the vernacular tongue is the best medium of instruction for

a child, but, except in East Pakistan (until 1971, when it became Bangladesh), Sindh, and some parts of Khyber Pakhtunkhwa (KP), no mother tongues were used as medium of instruction at the primary and secondary levels.

By the end of the 1950s, despite the efforts of the Urdu lobby to promote the use of Urdu and the ruling elites' apparent support of these efforts, it was English which emerged as the dominant language in government and higher education. The Central Superior Services (CSS) exams were held in English, and higher education was also in English. Hence, the urban Urdu middle-class also had a strong incentive to be educated in English. Not only the urban upper middle class but even feudal/tribal elites, though not literate themselves, sought to educate their children in elite English-medium schools (Rahman, 1997).[2] Moreover, under the patronage of General Ayub Khan, who himself was an Anglicised military dictator, the armed forces started developing their own schools—cadet colleges and PAF Model Schools—to provide subsidised, English-medium schooling, to prepare students for careers in the defense forces. In the words of Rahman,

> "The elite of wealth (feudal and tribal lords; business magnates, etc.) and the elite of power (the military and bureaucratic elites) made arrangements to facilitate the entry of their children into the elite, thus narrowing its base of selection, through promoting elitist schooling while professing to create equal opportunities for all through vernacularisation (Rahman, 1997: 184).

In 1959 the Sharif Commission on Education defended the above-mentioned government-subsidised English-language educational institutions in the name of efficiency and modernisation (CNE, 1959). However, the commission also recommended that both Urdu and Bengali be used as mediums of instruction from Class VI onward, and in this way, in about fifteen years, Urdu would reach a point of development where it would become the medium of instruction at the university level. The Commission had also stated that until Urdu was ready to replace English, English should continue to be used for advanced study and research. This statement allowed confusion to take root in terms of how and when and by whom it would be determined that Urdu was ready to replace English. This was a convenient method of maintaining the status quo, and English was given a fifteen-year extension (Khalique, 2007).

In 1966 students from less privileged Urdu-medium institutions protested against government-subsidised cadet schools, and a new commission under Justice Hamoodur Rahman was set up to examine student unrest and students' welfare problems. The commission agreed that cadet colleges and PAF schools violated the constitutional assurance that all citizens are equal before the law because teaching in English excluded some students. At the same time, the commission also defended the schools in the name of efficiency and modernisation (GOP, 1966:18). As a result, these cadet colleges multiplied post-1970. Moreover, the Hamoodur Rahman Commission also criticised those universities which had adopted Urdu as a medium of examination in BA for being over-zealous. (Karachi, Punjab, and Sindh universities were criticised for allowing Urdu and Sindhi as languages for instruction and sitting exams).

Despite these setbacks, the Urdu political advocates continued their pro-Urdu campaigns by demanding that signboards should be in Urdu and that proceedings of

[2]Examples include Aitchison in Lahore and Burn Hall in Abbottabad.

meetings be in Urdu (Rahman, 1997). Despite all the efforts of the Urdu lobby, the elitist officer corps of the higher administration, judiciary, and the military kept using English. Higher education, especially in scientific and technological subjects, also continued to be given in English. Urdu was allowed eventually for the Arts (i.e. Social Sciences and Humanities). According to Rahman (2019), although the policy was couched in the language of popular demand (i.e. Urdu) and facilitated access to higher education, it ghettoised the non-Science students and disciplines since they bore the stigma of being culturally and intellectually inferior.

In 1969, there was a new government, and a new committee (headed by Air Marshal Nur Khan) was constituted to overhaul the educational system. This committee recommended that Urdu and Bengali should be used as the medium of instruction by 1975 (PNEP, 1969). This was also the first time that an official document acknowledged that the use of English as the medium of instruction at higher levels was perpetuating the gulf between the "rulers and the ruled" (PNEP, 1969:3). However, the elite English medium schools (including the cadet colleges) remained, and the New Education Policy left the task of examining 'the question of the change over from English to the national languages' to a commission which would be established in 1972 (NEP, 1970: 19). Thus, the incipient radicalism of Nur Khan was reversed as the status quo asserted itself.

1971 marked the partition of Pakistan. In West Pakistan, the democratically elected Peoples' Party formed the government with ZA Bhutto as Prime Minister. The 1973 Constitution of the Republic was promulgated under Bhutto with Article 251 pertaining to language in education. The article declared Urdu as the national language and pledged to further its development. Moreover, a time frame of 15 years was set for the replacement of English with Urdu. The timing of the Constitution coincided with the lapse of the fifteen-year extension given to English by the Sharif Commission and hence refreshed that extension for another fifteen years.[3]

Given Bhutto's left-leaning social democratic agenda and secular views as well as his Sindhi roots, he was looked upon with suspicion by the Urdu lobby which by now comprised a large religious element in the Jamiat-e- Ulema-i-Islam (a religiously motivated party). Afraid of being categorised as the "Other", and to placate his opponents Bhutto succumbed to the integrative appeal of both Islam and Urdu, [4] while Sindhis demanded to promote and encourage Sindhi as an official language in the province, in congruence with Article 251(3) of the Constitution. This culminated in the Urdu-Sindhi language riots of January 1970 and July 1972. These riots were the response of the supporters of Urdu to what they thought was an effort to dislodge them from their position and make Sindhi the dominant language for education and administration in Sindh (Amin, 1988). Finally, Sindhi was adopted as the official language of Sindh, but little effort was made in real terms to give the language its due official status. In KPK and Balochistan, similar efforts were made by the provincial governments but, at the federal level, and in elite schools, English reigned supreme.

[3]The constitution also recognised the linguistic rights of speakers of regional and minority languages by allowing the Provincial Governments freedom to develop their languages.

[4]Although the 1967 Foundation Documents of PPP contained phrases expressing Marxian views, such as 'understanding of universe and altering it' and 'comprehension of the inexorable process of history', such phrases were deleted from the 1972 education policy and the Marxian content diluted, and the party claimed to advocate 'Islamic Marxism' (Durrani & Ansari, 2018).

Bhutto chose to placate the Urdu lobby (who by now was mostly aligned with religious parties) by announcing cosmetic Islamic measures rather than the less emotive, and more controversial, strategy of giving Urdu the place of English in educational institutions. By now, it was clearer than ever before: the supporters of Urdu became linked to the religious right-wing while the ethno-nationalistic elites and the anglicised elite were left of center, being either inclined to socialism (Amin, 1988:244) or liberalism, respectively (Rahman, 1997:18). The fortunes of Urdu would now be connected more closely than ever before with the struggle between the religious and the secular in Pakistani politics (Rahman, 1997:18).

It was during General Zia ul Haq's martial law that both Urdu and Islam came into their own. Zia himself hailed from a middle-class, religious background and therefore had the support of Urdu *mohajirs* and other Urdu advocates who appreciated his policies of Islamisation/Urduisation as part of his 'centralising ideology'. Now, Urdu was not only associated with Islam, but also with authoritarianism. In 1979 Zia ordered that all speeches should be in Urdu and also set up the Muqtadra Qaumi Zaban (National Language Authority) to consider ways and means for the promotion of Urdu as the national language of Pakistan and to make all necessary arrangements in this regard. By the end of 1979, many offices in Punjab began to use Urdu rather than English. Zia also ordered that Urdu be the medium of instruction in all schools from grade I, such that by 1989 the matriculation (10th grade) examination could be conducted in Urdu. Moreover, the Ministry of Education instructed schools not to use the English-medium nomenclature, and Islamic education was decided to be a compulsory subject until graduation. Considering the above initiatives Zia ul Haq was declared the 'Patron of Urdu', and such was the confidence of the Urdu lobby in him that in 1981 at the Annual Urdu Conference at Lahore (27–28 November, 1981) the Urdu lobby demanded that Urdu should be imposed through a presidential ordinance. But, in the end, despite all the fervor and enthusiasm even the 'Patron of Urdu' and martial-law administrator, Zia ul Haq, could not purge Pakistan of the English language either in the official domain or as a medium of instruction.[5]

Although many of the government and federal model schools did adopt Urdu from grade 1, the cadet schools and elite private schools remained in English medium. The major argument of the English lobby was that Pakistan would fall behind other countries if English was abandoned, while the Urdu lobby insisted that sufficient books did exist in Urdu and more could be translated. However, no practical steps materialised, and in 1983 the elite schools were given legal protection to prepare their students for senior and higher senior Cambridge examinations thus making the two parallel streams of education even more distinct. Instead, Urdu became a compulsory subject in these schools until class 12. Moreover, on 11 October 1987 General Zia ul Haq himself allayed any residual fears of the English lobby by declaring that English could not be abandoned altogether. According to Rahman, apart from a few editorials against the continuation of English language schooling, the reversal of the 1979 education policy, the biggest concrete step taken in favour of Urdu, was allowed to take place almost silently (Rahman, 1997: 198). Moreover, in 1987, despite the initial fervor, ministries were also instructed to continue their proceedings in English. Zia knew that the Urdu lobby would keep favouring him

[5]For newspaper articles related to the Urdu-English debate, see Akhtar, Rahman, and Syed, 1986.

despite their disappointment in his pro-Urdu stance, and Zia in the end realised that he could not alienate the Anglicised elite in the long run. Hence, English reigned supreme and the net result was two parallel streams of education: Urdu medium and English-medium.[6]

Zia's pro-Islamic policies also benefited madrassas and contributed towards further cementing/ amplifying the existing fissures in the Pakistan education landscape: President Zia administered a formalised zakat (Islamic religious tax–2.5 percent) process which was a departure from the tradition of leaving the donation of money to the individual. Money was now automatically deducted from bank balances and dispersed at the local level to institutions deemed worthy of support by religious leaders, creating new incentives for opening religious schools (Singer, 2001). This combined with extensive US/Saudi funding during the Afghan jihad led to mushroom growth of madrassas in Pakistan in the decade of the 1980s. However, Saudi funding predates the Afghan war; Saudi funding of *Ahl-e-Hadith* and *Deobandi* madrassas (which teach a more puritanical version of Islam than had traditionally been practiced in Pakistan) can be traced back to the 1970s under ZA Bhutto as he looked towards the Gulf states for support. The exact number is difficult to trace, but according to one estimate, in 1971 there were 900 madrassas in Pakistan, but by 1988 this number had increased to 8,000 with an additional 25,000 unregistered religious schools clustered along the Pakistan–Afghan border (Rashid, 2000). This funding not only predates, but also outlasted the Afghan jihad, and post-Afghan war madrassas continue to flourish (Nasr, 2000).

At the time of Zia ul Haq's assassination in August 1988, the position of Urdu in the sphere of higher education was not much better than it was when he first took power. By now the religious Urdu lobby had completely alienated the leftist secular forces. In 1989 Benazir Bhutto attempted to introduce English in all schools from class I as an attempt at modernisation, despite the fact that this policy conflicted with her party's socialist agenda. This policy was hurriedly launched through a government notification and with no well-defined implementation strategy. Little effort was made by the educational planners and school leaders in public sector schools to go beyond introducing English as a formality.

General Musharraf assumed power in October 1999 through a military coup. Musharraf's modernisation and "enlightened moderation" in religion replaced the more fundamentalist policies of Zia ul Haq. His government reiterated Benazir's pro-English stance supporting English as the language of and for development (Shamim, 2008). However, again no proper implementation strategies were adopted to translate these policy statements into practice in schools in Pakistan.

In 2010, under the 18th amendment to the Constitution, education became a provincial issue. This made the provinces more autonomous than before with the result that the Punjab government under chief minister Shahbaz Sharif decided to support the local demand for English in the public schools. The Punjab government passed an executive order converting many government Urdu-medium schools to English-medium.

[6]Under different circumstances, perhaps the demand for Urdu emerging as the national language might have been viewed as compatible with social justice and may have appealed to Pakistani leftists and liberals, but Urdu had now not only become associated with rightist Islamic forces, but also with authoritarian rule which had even labelled ethno-nationalists (vernacular supporters) as anti-state actors, hence, forever alienating the liberal, socialist forces.

The schools did not have sufficient numbers of teachers who could implement this policy in any meaningful way. Nor were the students exposed to English outside school, and the policy failed. In 2011 the British Council concluded that teachers still taught in Urdu and Punjabi just as they did before this policy was declared (PEELI, 2013: 22–23).

In 2014 the decision was reversed, and today the confusion regarding the medium of instruction continues, and in practice, public schools can be Urdu, English, Sindhi, or Pashto medium, depending on their location, with English being introduced in some public schools from grade III and in some from grade V. Matriculation (i.e. 10th grade) examination may be taken in Urdu or English, but Intermediate (i.e. 12th grade) examinations take place in English (Abbas, 1993). More recently in 2020, Imran Khan's government attempted to strengthen the instruction of Urdu at the primary and secondary levels through the introduction of a Single National Curriculum (see, Hussain & Saigol 2020, for a critique).

On the other hand, some English medium schools are now offering British O-level and A-levels to their students, thus increasing the gulf between Urdu and English language instruction. Higher education continues to be in English, and examinations for access to key government positions remain in English as well. We summarise the above discussion with a timeline of the English-Urdu disputes provided in Annexure I.

The narrative illustrates that while the state/ruling elite apparently supported Urdu because of its supposed integrative value, in the formal official domains it continued to support the use of English. Although the use of Urdu at the primary and secondary levels has expanded, this has not affected the hegemony of English within universities and colleges. Moreover, the increasing importance at lower levels of education should be analysed in the context of the increasing proportion of middle-class families sending their children to lower-cost private English medium schools of uncertain quality (ASER, 2015).

II. A GREIFIAN ANALYSIS OF INSTITUTIONAL CHANGE TO UNDERSTAND THE EVOLUTION OF PAKISTAN'S LANGUAGE POLICY IN HIGHER EDUCATIONAL INSTITUTIONS

Concerning the literature on language use in Pakistan, most studies are descriptions of the linguistic landscape most scholars focus on the effect that different language policies have on different language groups. They provide a valuable historical account of national/ provincial language struggles and how these conflicts perpetuate regional and class divisions (Abbas, 1993; Rahman, 2011; David, Ali, & Baloch, 2017; Murshid, 1985; Durrani, 2012; Durrani, et al. 2018). There has also been important ethnographic work that demonstrates how divisive ethnolinguistic identities have been forged through the separation of English and Urdu medium educational systems (Manan, David, & Dumanig, 2020, Shamim & Rashid, 2019). Rahman (1997) provides the most detailed historical narrative explaining intensifying class divisions by using the power elite theory developed in the mid-twentieth century (Pareto, 1935; Mosca, 1939; Mills, 1956). In this framework, language conflicts are interpreted as part of the struggle for resources between the ruling elite (military officers, business leaders, government, and political officials) and the proto-elite (an aspiring middle class largely excluded from power).

We agree with this class analytical approach and accept the argument that Pakistani's system of power privileges the socio-political status of an English-speaking elite. Thus, we do not take issue with Alavi's and Phillipson's arguments that the rise of English is associated with imperial projects of the United Kingdom and the United States (Alavi, 1972 & Phillipson, 2008). We also note, however, that the increasing demand from the middle class for English suggests a different contemporary dynamic regulating language use is at work. The sharp rise in the number of lower-status private English language schools (Andrabi, Das, & Khwaja, 2002) needs to be explained. (In fairness, Rahman does note this phenomenon in his work.) Moreover, to our knowledge, no analyst has attempted to link the rise of Urdu-medium madrassas to the further consolidation of English in Pakistan's higher education system.

An alternative methodology to power elite analysis is articulated by Ali and David (2021) who adopt a historical institutional approach to study policy choices associated with different language regimes. Their work is based on the framework developed by Sonntag and Cardinal (2015) which emphasises path dependence and focuses on the traditions/norms which regulate the activities of state officials. Sonntag and Cardinal argue that when policies do change, this occurs during critical junctures or crises caused by exogenous shocks to the governing system. In our opinion, this dependence on critical junctures to explain change (or lack thereof) is not analytically robust because this framework disconnects the actions of state officials from the social interests which the state serves.

Our alternative, Greifian analysis begins with a consideration of how aspects of any institution—norms, beliefs, rules, and the distribution of advantages—are relevant to the Urdu-English choice in Pakistan. Social norms are defined as informal rules of behaviour which are not codified but are reflected in the spontaneous behaviour in the population. Beliefs attach judgments (either positive or negative) to a particular form of behaviour, and rules create government-sanctioned hierarchies of behaviour. Greif defines an institution as a *system* of norms, beliefs, organisations, and rules "exogenous to each individual," which "conjointly generate a regularity of behaviour" (Greif, 2006: 30).

In one sense, language does seem to fit into Greif's definition of an institution. Language can certainly be viewed as a set of distinct rules of communication which are human-made but not chosen by the individual. Moreover, the continual use of language depends on the strength of payoffs in terms of facilitated communication with others. On the other hand, there is an aspect of language which escapes the definition of an institution. Language is not generated through a belief system or a set of norms in the same way that a pre-pandemic handshake or procedures governing marriage might be. While the particular language we use is learned, our ability to communicate in the enhanced way which humans can is a genetically programmed capacity more similar to the capability of walking on two legs. The issue of language as an institution becomes relevant, however, when studying language choice or the way in which different forms of linguistic expression are used in different social contexts. Language becomes more like an institution when the use of a particular linguistic expression is challenged. In this sense, norms govern the words and grammar appropriate for communication within a social group, beliefs make one more likely to elevate one language or dialect over

another, and rules regulate which language is permitted to be used in particular government-sanctioned contexts. Greif, by distinguishing between rules and beliefs, places motivation at the center of the analysis and argues that if prescriptive rules are to have an impact, individuals must be motivated to follow them.

Greif develops a theory of change by labeling structural features of a society (such as demographic composition or particular trading relations) quasi-parameters if they evolve over time and either reinforce or undermine the net benefits related to a particular institutionalised behaviour, such as receiving educational instruction in a specific language. In the case where the evolution of these variables weakens benefits, then norms, beliefs and rules can change as the particular institution becomes more sensitive to exogenous shocks. On the other hand, we observe institutional stability if the movement of these variables reinforce behaviours (Greif, 2004).

This framework bears some resemblance to older theories of institutional change. For example, in Marx's most general discussions of historical evolution, changes in technology (the forces of production) can be interpreted as an evolving quasi parameter which ultimately disrupts a regime's property institutions (relations of production). Society becomes less resilient, and changes in the environment can lead to a rapid institutional change in property relations (Marx, 1978:3-6). Smith's more gradualist theory of evolution can also be interpreted through a Greifian framework. In this case, the steady increase in internal and external trade serves as a quasi-parameter whose expansion reinforces those political institutions which support commercial society (Smith, 1981: 411-17). In contrast, Thorstein Veblen's original theory of institutional change is not relevant to this discussion since Veblen maintained that institutions are sticky even as underlying economic conditions change.

How can a Greifian framework be used to explain the declining salience of struggles to make Urdu the language of instruction in Pakistan's higher education institutions? We hypothesise that there are three major quasi-parameters which affect language use in universities and colleges. The first two clearly reinforce the use of English in higher education, while the last one appears to challenge English as a medium of instruction but paradoxically strengthens its contemporary predominance.

The first quasi-parameter is the general rise in educational attainment in Pakistan's population. While educational outcomes lag behind other countries in South Asia, the proportion of children receiving some education has risen. We hypothesise that such trends increase the demand for English instruction at the primary and secondary levels. This is because some students with the support of their parents who otherwise would not have received very much education will now desire to attend colleges and universities. This, in turn, requires competence in English. Learning English as a child to gain entry to a college or university will make this non-elite population resistant to any attempt to remove English as the medium of instruction. This increased support of the status quo will occur whether the language of instruction at the primary or secondary level is in English.

Our second hypothesis is that increased socio-economic globalisation also increases the demand for English. Increasing numbers of professional jobs require English competence. Pakistan's previous efforts at making Urdu the medium of instruction in universities recognised this by focusing on changing instruction only in law and social sciences. The further evolution of the global networks of trade, education, and communication, however,

have made even Urdu instruction in these fields less attractive. Many legal issues now take on a global dimension, while social science investigations increasingly rely on English to communicate findings to the wider global community. The power of English as the international language of business, science, and diplomacy is demonstrated by two examples. First, even with the exit of the UK from the European Union, the primary form of communication amongst the countries of the Union continues to be English rather than German or French. Second, the increasing number of English language degree programs in China and other countries of East Asia suggests that the importance of English has become stronger in areas where not long ago, this language was rarely used.

Our third hypothesis is counter-intuitive and requires more explanation. We argue that in the case of Pakistan, the rise of Urdu instruction in the booming madrassa sector has had the paradoxical effect of strengthening the hold of English in Pakistan's traditional higher education institutions. The religious schools' use of Urdu and to a lesser extent Arabic does not have spillover effects on higher education medium of instruction because of its strong separatist tendencies. The students in madrassas are using education for both moral/religious instruction that their parents require and for entry into religious-oriented jobs such as Imams, teachers in the madrassas, and judges in sharia law. In a way, the rise of these schools has created a more segregated society which has drained potential students who might previously have demanded Urdu instruction in universities.

A provocative analogy can be made with Israel's educational system. Its educational system has a world-class secular higher education sector. While the medium of instruction is in Hebrew, students are expected to read complex texts in English. On the other hand, Israel also has a large independent system of education for orthodox and ultra-orthodox Jewish students who wish to focus on religious instruction. The result has been a separation of Israel's Jewish population. Increasing numbers of secular and religious Jews do not participate in each other's institutions (Wolff, 2022). As in Pakistan, the rise of religious schools has, if anything, strengthened the efforts by Israel's traditional colleges and universities to become more tightly integrated with Western institutions. This strengthens the commitment of university educators to a sophisticated degree of competence in English from their students.

We summarise our arguments in the following Table 1.

Table 1

The Strengthening Grip of the Use of English in Pakistan's Higher Education Institutions

Evolution of Quasi-Parameters	Hypothesised Effect	Impact on the Use of English in Higher Education Institutions
Increased educational attainment at primary and secondary levels	Increased parental and student demand for instruction in English	Strengthen
Increased socio-economic globalisation	Increased demand for professionals who are competent in English	Strengthen
Rise in the use of Urdu in religious educational institutions	Separation of sectors of the population more likely to demand instruction in Urdu from secular educational institutions	Strengthen

These trends imply that the endogenous evolution of these three quasi-parameters has reinforced and strengthened the use of English in Pakistan's universities and colleges. Thus, it is unlikely that future campaigns to change the medium of instruction in universities and colleges will be successful. This does not necessarily mean that controversies over the appropriate language of instruction at the primary and secondary levels will not continue. It is likely, however, that whatever the medium of instruction in lower levels of education, there will also be increased emphasis on English language instruction as well–especially for schools which cater to Pakistan's middle class.

III. CONCLUDING REFLECTIONS

The use of language is an intrinsic part of the functioning of any human economy, but language is not often conceived as a productive input or resource (part of the forces of production) or as an institution which plays a crucial role in the reproduction of social difference (part of the relations of production). Adam Smith did argue that the human propensity to trade is closely linked to our ability to use language, but very few other economists have treated language as part of our economic experience (Smith, 2001). Perhaps this is because of the centrality of language to all aspects of the human experience is so obvious that its role in the functioning and structure of the economy need not be noted.

It is more in the realm of politics that language use has been seen as central to the formation of coherent political units. The ability to enforce order and promulgate a series of laws requires the ability to communicate. For this reason, the creation of nations is often associated with the promulgation of a national standard language which in turn marginalises those subjects who communicate through alternative languages or dialects (Anderson, 2002). The creation of a new class/racial/ethnic/linguistic order also has a transnational dimension. For example, Phillipson has argued that the spread of a particular language is often associated with an imperial project—the establishment of a formal empire or the creation of key economic and political institutions which project the power of the nation or certain key members of the political-economic elite. Indeed, in a provocative article, Phillipson labels the spread of English in the late twentieth and early twenty-first century as the result of a process of linguistic imperialism which has consolidated the neo-liberal economic order (Phillipson, 2008). In addition, Hamza Alavi noted in his earlier analysis of the formation of the Pakistani state that the roots of the late 1940s governing order had its roots in the British sponsorship of a ruling elite lodged in the bureaucracies and militaries of the colonial state (Alavi, 1972).

Both Phillipson's and Alavi's arguments are important but caricature the role of English in contemporary Pakistani society. We acknowledge that English competency is unequally distributed and reflects intense class and regional inequalities. We also agree with the obvious but important point that the rise of English in South Asia is due to the colonial experience. Nevertheless, we argue that English use in Pakistani society is no longer an imperial imposition. The increasing use of English in China, for example, hardly reflects capitulation to a Western imperial order, and the same could be said for Pakistan. There are now important non-elite constituencies demanding the maintenance of English as the medium of instruction in higher education institutions.

In this essay, we explored the complex issues associated with the legitimation of particular languages by analysing the contentious struggles between advocates for Urdu and advocates for English with respect to Pakistan's higher education system. Much of our analysis is admittedly speculative, but we think that it opens a productive research path for the understanding of language use and language conflict in Pakistan. Collecting empirical data on attitudes towards English, Urdu, and other languages in Pakistan would be very useful. In addition, attempting to link the use of English to globalisation through careful empirical studies would allow future research projects to confirm or reject the hypotheses we have offered. Finally, we believe that more attention should be paid to the social and educational implications of the rise of both a vibrant Urdu sector of religious education and the new private English language schools. Pakistan is still searching for an educational framework which can integrate rather than separate the contending social groups which make up the nation-state. Recognising the stability of the use of English in colleges and universities is paradoxically an essential part of designing policies that can create greater social integration.

ANNEXURE 1

TIMELINE OF POLICY ON LANGUAGE AND HIGHER EDUCATION

1948: Advisory Board of Education meets in 1948 and states that Urdu should replace English as the language of instruction in higher education.

1952: First cadet college (Hasan Abdal) was established; this was followed by setting up a cadet college in Chittagong, then East Pakistan, in 1958. Post 1958 Ayub Khan continued to establish Cadet Schools and PAF Model Schools to train students for careers in defense forces.

1957–58: The University of Karachi forbade students from taking examinations in Sindhi.

1959: Sharif Commission defends instruction of English in universities but calls for Urdu and Bengali to be used in Secondary Schools. Urdu and Bengali should replace English in universities in fifteen years (1974).

1963-1966: Urdu was allowed as the language of instruction in universities in Humanities and Social Sciences. Karachi University (allowed Urdu in 1963), Punjab University (allowed Urdu in 1966), and Sindh University (allowed Sindhi) (RCSP, 1966: 114).

1966: Urdu students protest against state-subsidised English Language Cadet Schools/Colleges. The Ministry of Education (MoEd), requested Justice Hamoodur Rahman to lead the "Commission on Students Problems and Welfare" to consider controversy.

1966: Hamoodur Rahman Commission agreed that state-subsidised English language schools were unconstitutional but defended the continued use of English in universities on efficiency grounds and criticised the universities which had adopted Urdu as the medium of examination in B.A./M.A.

1969: New Commission led by Air Marshall Nur Khan stated that Urdu and Bengali should be the primary medium of instruction in universities by 1975. Timing and policies to implement of transition would be determined by the commission to be created in 1972.

1970: First Urdu-Sindhi Language Riots.

1971: Partition of Pakistan. Disputes over Bengali and the status of higher education in East Pakistan are no longer part of higher education policy.

1972: Second Urdu-Sindhi Language Riots

1973: Constitution of Pakistan promulgated. Urdu was declared to be the national language. Higher education in Urdu to be implemented within fifteen years (1988).

1972: Sindhi Language Authority (SLA) was established under the Use of Sindhi Language Act 1972 and Sindhi was adopted as an official regional language of Sindh.

1979: Zia ul Haq ordered that all government-related speeches should be in Urdu.

1979: National Language Authority (Muqtadra Qaumi Zaban) was created to promote Urdu.

1979: Order issued that all instruction in Year 1 be in Urdu so that matriculation exams could be in Urdu by 1989. Islamic education made a compulsory part of school instruction.

1980s: Rapid Growth of Islamic Madrassas where Urdu was the main language of instruction.

1983: Elite English-language schools given legal protection so that students could prepare for senior Cambridge Exams.

1983: Urdu language training became compulsory through Grade 12.

1987: Zia proclaimed that English could not be completely abandoned as a language of instruction. Ministries were instructed to continue holding proceedings in English.

1989: Benazir Bhutto attempts to introduce English instruction in all classes from grade 1.

2010: 18th amendment of the Constitution makes education policy a provincial issue.

2011: Punjab government passed executive order converting Urdu medium schools to English medium schools.

2014: Punjab government revokes executive order.

2020: Single National Curriculum. In provinces where SNC was adopted, private schools have been advised to teach Islamiyat and Social Studies in Urdu initially from grades one to three class later this will be implemented from grades 1 to 5.

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Policy

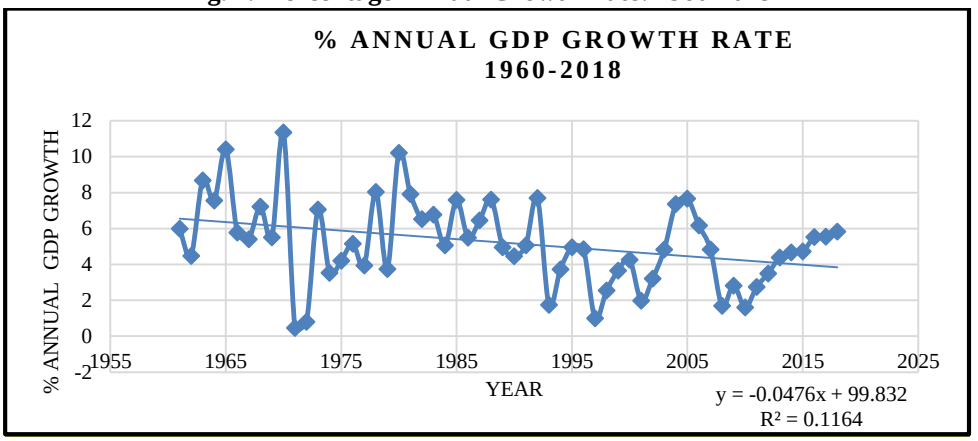
Towards a Stable Economy and Politics

NADEEM UL HAQUE and RAJA RAFI ULLAH

1. CONTEXT TO THE KNOWLEDGE BRIEF[1]

Pakistan throughout its history has seen regime changes from more democratic to more authoritarian and vice versa. This has meant that the country's political and social landscapes have remained volatile and unstable. Many economists argue that this instability has partly contributed to the stifled and irregular growth patterns in the country. The average GDP growth rate has been irregular from decade to decade, with an overall long-run downward trend (see Figure 1).

Fig. 1. Percentage Annual Growth Rate: 1960-2018 [2]



If political stability is a prerequisite to sustained rapid economic growth, have then stable non-democratic regimes been more successful in Pakistan at spurring high growth and leading to higher standards of living? Surely, such simplistic viewpoints are mere rhetoric. A study published in *The Pakistan Development Review* in 2016 that used data from 1960-2013 for 92 countries including Pakistan found a negative relationship between Human Development Index (HDI) and prevalence of authoritarian institutions.[3]

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[1]This Knowledge Brief is a follow-up to a webinar organised by PIDE titled, "Towards a Stable Economy and Politics" on May 9, 2020. Moderated by the VC, PIDE, Dr. Nadeem Ul Haque, the speakers included Wasim Sajjad (lawyer, Politician and Former Senate Chairman), Irfan Qadir (Former Attorney General of Pakistan), and Hasan Askari Rizvi (Pakistani Political Scientist and Military Analyst).

[2]Data Source: Pakistan, World Development Indicators, World Bank, 2020.

[3]Khan, Batool, and Shah (2016). *The Pakistan Development Review*, 55(4).

Furthermore, experts argue that for democratic regimes to lead to sustained rapid economic growth, the democratic institutions must be allowed to mature over time through successful democratic transfers of power.

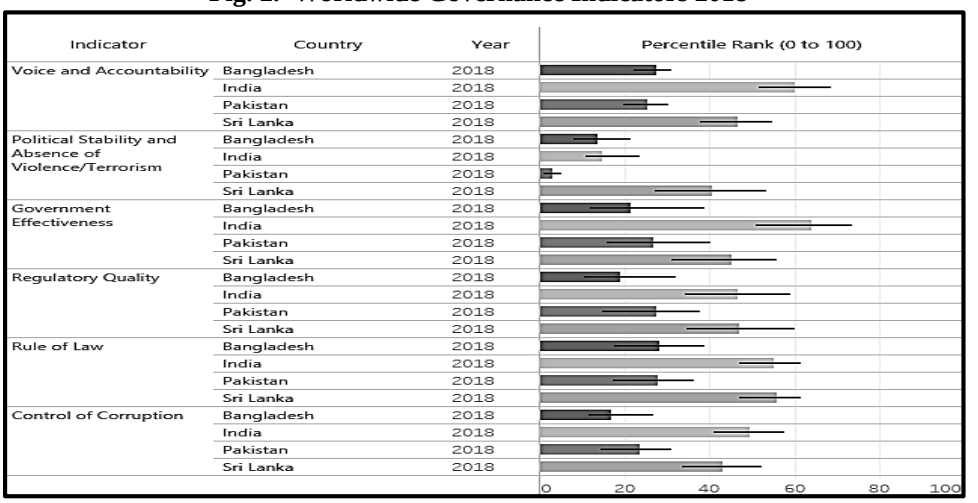
1.1. Institutions

Mature representative institutions are a key ingredient to sustained economic growth[4] and same is true for state institutions such as the executive, parliament, bureaucracy and the judiciary. Unfortunately, Pakistan throughout its history has maintained non-representative state institutions that serve to maintain the status quo. This in part is due to the colonial[5] setup of the state machinery that Pakistan inherited upon independence. Having said that, all cannot be attributed to historical contingency; there are systematic issues that if addressed can help bring about stable and representative institutions that drive sustained rapid economic growth.

1.2. Governance

Governance issues have typically impeded economic growth and investment in the country. Pakistan has too many layers of government that many times have hampered the growth of private enterprise in the country. This view is echoed in Pakistan's ranking on World Bank's Worldwide Governance Indicators (WGIs). Pakistan has the lowest percentile rank among its peer countries[6] on 3 out of 6 WGI indicators: Voice and Accountability, Political Stability and Rule of Law. Of the three remaining indicators on Government Effectiveness, Regulatory Quality and Control of Corruption only Bangladesh is ranked lower. [7] (See Figure 2).

Fig. 2. Worldwide Governance Indicators 2018[8]



[4]Acemoglu & Robinson (2012). Chapter 5, Why Nations Fail.

[5]Haque, Nadeem Ul (2017). Looking Back: How Pakistan Became an Asian Tiger by 2050.

[6]WGI Indicators (2018) comparison of 4 South Asian Countries: Bangladesh, India, Pakistan & Sri Lanka.

[7]Worldwide Governance Indicators (2018). World Bank, info.worldbank.org/governance/wgi

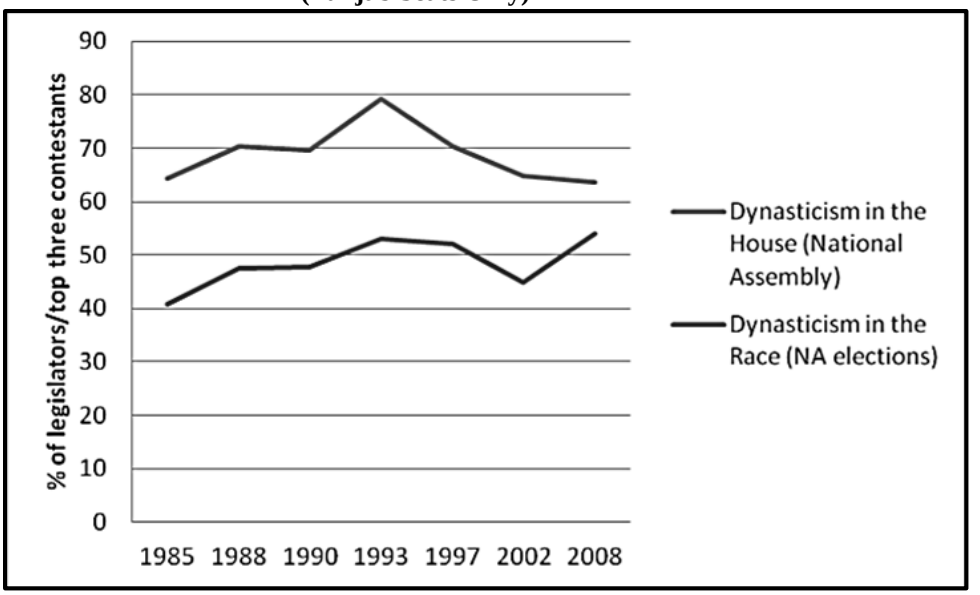
[8]Worldwide Governance Indicators (2018). World Bank.

Given the scenario described above, Pakistan Institute of Development Economics (PIDE) brought together experts[9] for a webinar to discuss the issues. A summary of the questions addressed in the webinar is presented below:

1.3. Is Politics in Pakistan Dominated by Dynasties/Families? Can a "Common Person" Enter Politics?

The politics in Pakistan is characterised by a dilemma where despite there being hotly contested elections the political landscape is still dominated by families and dynasties. Those who are not part of existing powerful political families/dynasties have low chances of both entering politics and being successful in elections. Cheema et al. (2013) investigated this question of dynastic politics using data from Punjab and found that from 1985-2008 on average two-thirds of elected national-level legislators (MNAs) and about half of all MNA candidates from MNA constituencies in Punjab were dynastic.[10] (See Figure 3).

Fig. 3. Dynasticism in the National Assembly[11]
(Punjab Seats Only)



The data points towards the fact that there is a high incidence of dynastic politicians (also known as electables) who have permeated the system down the level of individual constituencies. Although Cheema, et al. (2013) have used data from Punjab only, the situation in other provinces in Pakistan can be assumed to follow similar patterns. Comparatively speaking on a regional level, the percentage of dynastic

[9]See back-end of the document for list of webinar panelists.

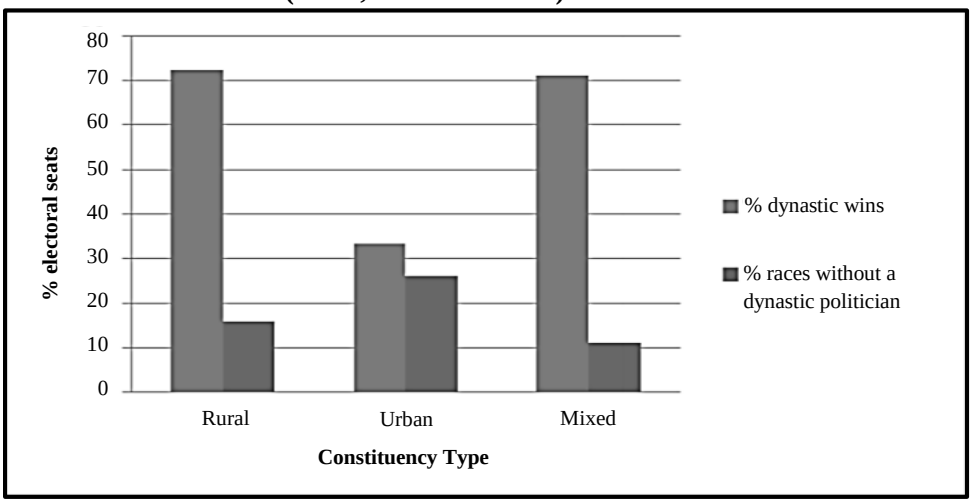
[10]Cheema, Ali, Javaid, Hassan, & Naseer, Farooq (2013). Dynastic politics in Punjab: Facts, myths and their implications, IDEAS, Pg. 1.

[11]Cheema, Ali, Javaid, Hassan, & Naseer, Farooq (2013). Dynastic politics in Punjab: Facts, myths and their implications, IDEAS, Pg. 2.

legislators in the national assembly observed by Cheema, et al. (2013) is almost twice the percentage of such legislators in the Indian National Assembly/Lok Sabha.[12]

Despite there still being a high incidence of dynastic politics in Pakistan, the numbers have declined slightly in urban areas over the past few decades. Whereas in non-urban areas the problem still remains pronounced. And we should remember that the distribution of constituencies has not been aligned with the new census.

Fig. 4. Percentage Dynastic NA Wins in Punjab[13] (Rural, Urban & Mixed)



In comparison to urban politicians, dynastic politicians in cities are 40 percent points less likely to win their constituencies. (See Figure 4). Furthermore, the number of elections that don't have any dynastic politician running for office is 10 percent points higher in urban areas as compared to rural areas. (See Figure 4).

Despite the observed decline in urban areas, familial political dynasties still wield significant power in Pakistan and continue to maintain the status quo. Having said that, certain policies if implemented correctly can trigger transformation and make entry of more non-dynastic politicians into the system possible. Adjusting constituencies in line with the censuses will allow increasing urbanisation to open out the political landscape. The hold of dynasties will weaken.

Strengthening and facilitating the local government system by holding periodic elections. Barriers to entry in local elections for non-dynastic politicians are less than in elections at higher levels i.e. provincial and national.

Furthermore, many countries in the world have term limits on "one or more executive and elected positions. Pakistan no longer has any term limits on any directly elected position. We only have term limit for the post of the President which at best can be described as only a ceremonial position under the current constitution

[12]French, Patrick (2011). Quoted in Cheema, Ali, Javaid, Hassan, & Naseer, Farooq (2013). Dynastic politics in Punjab: Facts, myths and their implications, IDEAS, Pg. 2.

[13]Cheema, Ali, Javaid, Hassan, & Naseer, Farooq (2013). Dynastic politics in Punjab: Facts, myths and their implications, IDEAS, Pg. 5.

arrangement. Introducing term limits for positions such as the "Prime Minister, Minister or even membership of parliament" will allow for new people to come into the system.[14]

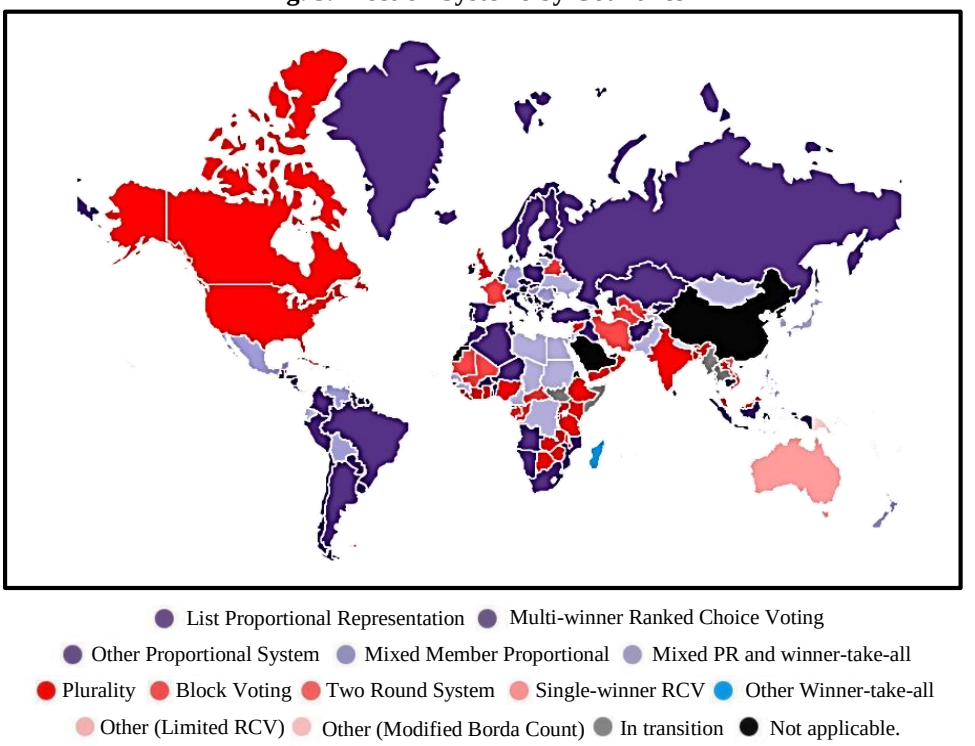
1.4. Does the Electoral System in Pakistan Need Reform?

Free and fair elections on periodic basis are one of the most effective ways through which a country's institutions mature over time. Pakistan for the first time in its history has had two parliaments complete the constitutional 5 years without a mid-year election (2008-2013 and 2013-2018). This is a welcome sign, but the electoral system in Pakistan needs to be reformed to accelerate the process of building strong democratic systems in the country.

- Currently as it stands both national and provincial assemblies remain in place for five years unless parliament is dissolved earlier. The consensus among our eminent speakers was that this was perhaps too long. Recent experience has shown that the parliament becomes contentious, fragmented and often dormant. The pressure of elections which is supposed to keep the government on its toes is somewhat distant in a 5-year term and contributes to this lack of cooperation between the political parties. Our eminent speakers agreed that there was a need to reduce the constitutional term of the parliament at provincial and federal levels to 4 years.
- Our speakers also felt that there was a need for more frequent elections rather than the once in 5-year pattern that we currently have. Everything, the senate, the president and all levels of government are decided in one election. The Federalist Papers noted that in making the US Constitution, it was carefully deliberated to set up a system with differing terms for president, the House of Representatives, the senate, the state and local governments to ensure that elections happened every year for some level of government. The panel felt that perhaps it was time to consider direct senate elections as opposed to the current indirect method.
- The panel also agreed that there was an urgent need to develop a local government system with a four-year term and to allow the election cycle of that to differ from the national and provincial cycles. With the senate, provincial, local and national elections, regular elections will keep a barometer on all parties on a continuing basis.
- The election system too was reviewed, and 3 issues were discussed:
  - ❖ "First past the post" (FPTP) also known as "Plurality" system is the oldest election system in the world and was also adopted by Pakistani. However the FPTP system is used only by a minority of countries mostly the US, UK and a few former British colonies. (See Figure 5). Even Pakistan has accepted a proportional system for women seats.

[14]Haque, Nadeem Ul (2017). Designing democracy and what is the PM term? Development 2.0.

Fig. 5. Election Systems by Countries[15]



- The FPTP system has also produced majority governments despite the parties forming governments earning less than one-third of the total vote. For instance, in the last two general elections, PML-N (2013) and PTI (2018) won 33 percent and 32 percent of votes respectively and yet were still able to form majority governments by bringing in independents and regional parties MNAs. (See Figure 6). Our panel felt it was time to examine other systems to allow more representation and workable governments to emerge.
- The Articles 51[16] and 106[17] of the constitution lay down the mechanisms for allotment of seats for women and minorities in national and provincial assemblies respectively. Currently as it stands the seats are allocated proportionately based on election results among the parties. Some of our panelists argued that although this allocation of reserved seats adds diversity through inclusion in the legislatures, the process also distorts the system. Furthermore, since the allocation is made from the nomination lists provided by the parties, it leaves women and minority candidates at the mercy of the whims of their parties' leaderships. Perhaps there is a need to devise a system that includes more direct forms of election on these reserved seats.[18]

[15]Electoral Systems Around the World, FairVote.org
[16]Article 52 of Constitution, Pakistanconstitutionlaw.com
[17]Article 106 of Constitution, Pakistanconstitutionlaw.com
[18]Shah, Waseem (2018). Mechanisms for filling reserved seats seen as flawed, *DAWN* Newspaper.

Fig. 6. Percentage Vote and NA Seats for Winning Party (2018[19] & 2013[20] General Elections)

Election Year	Party Forming Party	Votes	% Vote	National Assembly Seats (NA)[21]	% NA Seats
2018	Pakistan Tehreek-e-Insaf (PTI)	16,903,702	31.82	149	43.57
2013	Pakistan Muslim League Nawaz (PLM-N)	14,874,104	32.77	166	48.54

- ❖ The rules pertaining to definition of what constitutes a political party are such that growth of non-representative political parties is encouraged. The Chapter XI (sections 200-213) of Elections Act 2017[22] specifies rules for definition, formation and functioning of political parties. The rules specify that any "body of individuals or association of citizens" can form a political party and that only 2000 registered members are required for formation and enlistment of a political party. Most of our eminent panellists agreed that rules including this membership threshold is too low and encourages the growth of splinter/fragmented parties who don't necessarily reflect the needs and the desires of the electorate at-large. Perhaps there is a need to devise rules that lead to representative political parties by increasing the number of registered party member who include both active members and those who make significant contributions to party funds.
- ❖ Furthermore, the laws pertaining to intra-party elections as specified in section 208 of Elections Act 2017[23] are not elaborate enough to result in true representative intra-party democracy. On top of that, the Election Commission is often lax in enforcing these rules and most often the intra-party elections are exercises carried out to fulfil formalities rather than being carried out in the spirit of promoting intra-party democracy. The result is that existing dynastic and personality based power asymmetries are reinforced in most political parties in Pakistan.
- ❖ The asymmetries of power are further strengthened when those party members who are lucky enough to get party tickets and enter the parliament, are then again unable to voice any opinions other than those dictated by the party centre. The 14th Amendment to Constitution[24] has fundamentally made it impossible for members to vote against party-lines in the legislature.

1.5. Does Pakistan have too Many Federal Ministers/Ministries?

- In Pakistan currently there are 51 current members of the Federal Cabinet Division including 31 Cabinet Ministers, 5 Advisors to the Prime Minister and 15 Special Assistants to the Prime Minister.[25] The question is that whether Pakistan actually needs these many federal ministers, or should the size of the cabinet be reduced to encourage simplicity particularly given that the 18th

[19]General Elections 2018. Election Commission of Pakistan.
[20]General Elections 2013. Report, Election Commission of Pakistan.
[21]Figures include proportionally allocated reserved seats for women and minorities.
[22]Elections Act 2017.
[23]Elections Act 2017.
[24]14th Amendment. Pakistanconstitutionlaw.com
[25]Cabinet Division. cabinet.gov.pk

Amendment and the NFC Award have significantly devolved key functions to the provinces. Although it is true that the number of ministers at the federal level is below the maximum stipulated by the 18th amendment to the constitution; yet there are too many ministries that could instead be merged into other ministries. For instance, what is the point of having a separate petroleum minister when there is already an energy minister? Or why have separate federal ministries for health, education and food security when these functions have been devolved to the provinces? [26]

- Some of our eminent panelists recommended reducing the size of cabinet through mergers and proper streamlining. This reduction was advised particularly keeping in mind that in addition to the ministers, Pakistan also has an extensive bureaucracy at federal level consisting of secretaries that wield substantial power. The ministers combined with the bureaucrats add to the layers of government that fosters confusion, rent-seeking behaviours and increased regulatory control. All this acts to stifle private investment and reduces the ease-of-doing-business. In such stead, the policy of excessive ministerial appointments to accommodate coalition parties in government needs to be revisited.

1.6. What about the Question of Reforming the Civil Service of Pakistan?

- Pakistan from its very beginning inherited a colonial style civil service structure that is extractive and non-representative.[27] Having said that, incessantly pointing out that the bureaucratic structures are inefficient and corrupt does not serve constructive purposes. Perhaps we need to realise that self-interested profit-seeking is one of the basic human psychological traits. An alternate way of addressing the problem could be by creating innovative incentive structures that promote efficiency and performance in the civil service.[28] This would require careful drafting of performance contracts that reward high levels of effort through measuring observable indicators. Having said that, drafting of effective incentive contracts is a specialised skill, which if carried out correctly holds the key to solving many problems that plague the civil service in Pakistan.[29]
- For effective civil service reform, perhaps the need of the hour is to look at a micro-level and understand what drives day-to-day behaviour of civil servants and work backward from there to formulate policy interventions. [30]

1.7. How can the Legislature be Empowered?

An empowered strong legislature including the parliament needs to complement the executive branch in policy-making. Currently, the parliament as a body is not strong and doesn't guide bulk of the policy-making.

[26]Mehboob, Ahmed (2018). How big should the cabinet be? *DAWN* Newspaper.
[27]Haque, Nadeem Ul (2017). *Looking Back: How Pakistan Became an Asian Tiger by 2050*.
[28]Haque, Nadeem Ul (2007). Why Civil Service Reforms Don't Work, PIDE, Pg. 16.
[29]Haque, Nadeem Ul (2007). Why Civil Service Reforms Don't Work, PIDE, Pg.16.
[30]Haque, Nadeem Ul, et al. (2006). Perception Survey of Civil Servants: A Preliminary Report.

- Our panelists agreed that although having parliamentary approval as a prerequisite for each and every policy decision would cause excessive delays, the parliament still needs to grow and mature as an institution. Recently, parliamentary standing committees on various subject matters have added to the empowerment and relevance of the parliament. This process can be furthered by adding periodic parliamentary review in the TORs of such committees on matters that fall under their mandate.
- A balanced equilibrium between the three pillars of the state i.e. executive, legislature and judiciary often lead to systems that are conducive to stability and hence facilitate economic growth. Important ingredients to such equilibrium are constitutional frameworks that allow for cross-institutional checks on power, but also at the same time ensure that institutional overreach is limited. Perhaps it is time to look at introducing reforms such as judicial reforms to make sure that while acting as an important institution for checking the power of both the legislative and legislature, the judiciary doesn't stand in the way of policy making and issues of legislative and executive concern that require immediate action.
- Our panelists also mentioned that the interplay between the executive and the parliament also needs to be examined. In Pakistan, even in democratic setups, the quench for unchecked power to dictate policy is as such that the executive (usually the Prime Minister and his close group of ministers) deliberately weaken the parliament when it comes to having a voice in policy making.[31] One example of such executive overreach is the 14th Amendment to the Constitution which reinforced strict party discipline essentially meaning that those ruling party members who oppose executive decisions in parliament are constitutionally liable to being disqualified from the house and have their party membership cancelled.

1.8. How can Technical Processes be Insulated from Politics?

Technical processes such as management of public health, managing the energy sector and formulating an effective Public Sector Development Program (PSDP) are tasks that require level of expertise that go beyond political dictation. In Pakistan elected politicians, particularly those who are vested with some sort of executive power often interfere in ways that impede evidence-based policy formulation and implementation of technical processes. Furthermore, there is a common perception among politicians and public at-large that 'technocrats' have harmed the democratic system since most dictators brought an entourage of technocrats into government. However, this rhetoric and complementary aversion of politicians to technocrats is misleading, because in principle Pakistan has never had technocrats brought into policy-making through a rigorous selection process. Those technocrats who have ended up in positions of authority under dictators have often come about because of cronyism rather than as a result of selecting the best suited persons for the jobs.[32]

[31] Haque, Nadeem Ul (2018). Imperial Democracy. Development 2.0.

[32] Haque, Nadeem Ul (2017). Why Do Politicians Hate Technocrats? Development 2.0.

Our panelists agreed that in most mature democracies it is not the ministers and ones with executive power that dictate specifics of policy formulation which requires a level of expertise. If one was to draw parallels to how a corporation is run; the ministers in mature setups act as board members who give policy direction but are not involved in either day-to-day operations or formulation of policies that require specialised skills and qualifications. A good place to start in Pakistan could be to stop promoting rhetoric that "lumps all manner of skilled professionals into one vague category" i.e. 'technocrats'.[33] Skilled professionals are part of almost all mature democratic systems and play a pivotal role in efficient service delivery and don't act as an automatic antithesis to democratic elected politicians.

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Wheat Support Price: A Note for Policymakers

ABDUL JALIL, FAHD ZULFIQAR, MUHAMMAD AQEEL ANWAR,
NASIR IQBAL, and SAUD AHMED KHAN

Wheat Crisis: A Market-based Solution

The main recommendation has been for a while and remains true that the government should withdraw from the market. This would mean: (i) start by setting indicative pricing and stand back from procurement; (ii) withdraw from storage over a period of 5 years as private capacity develops; (iii) over a period of 5 years, in a stepwise fashion, withdraw import and export controls; (iv) liberalise spot markets to allow entry and competition through dissolving DC led markets; & (v) develop rules and standards for commodity (forward and futures) markets in key areas as storage develops. This will mean strengthening the Karachi exchange or develop rules for local exchanges.

The government can solve this issue through proactive market development policies. However, the time has come to withdraw from the system of government involvement in procurement and prices. It has led to repeated shortages and excesses as well as fiscal costs. The international market can readily supply wheat at short notice. With the market in place, the probability of a shortage will be minimal. Like every other county, the government will monitor and remain ready to intervene in extreme circumstances.

Nadeem Ul Haque

1. BACKGROUND

Wheat is one of the most strategic crops globally, which has always been a big challenge for many governments. Over the last few months, Pakistan's government is struggling to fix wheat prices in the country due to weak governance and mismanagement. The Minimum Support Price (MSP) for the Year 2019-20 was PKR. 1,400, but the market price of wheat rose to PKR. 2,256 per 40 kg in the first week of October. The Prime Minister of Pakistan directed relevant authorities to devise a comprehensive plan to ensure the supply of wheat on market prices. The plan should look at the current stock, future demand, and import policy to fulfil domestic needs. PIDE has developed a brief to provide a comprehensive plan to ensure the supply of wheat on market prices.

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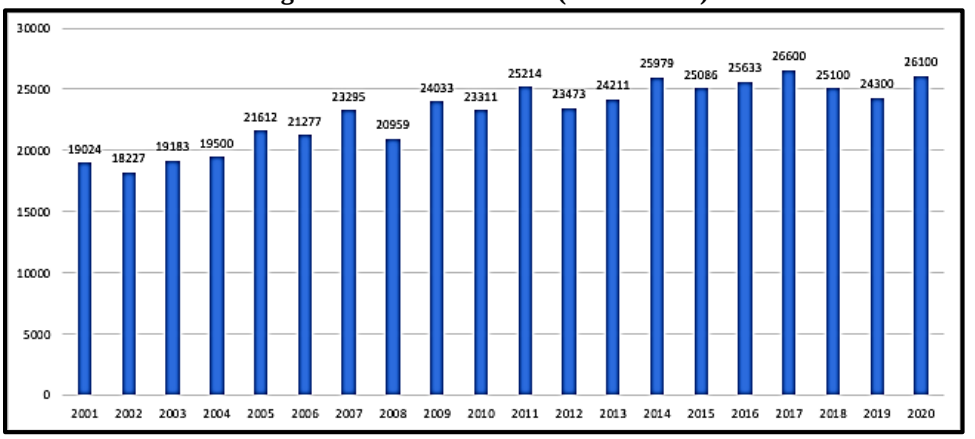
2. WHEAT PRODUCTION AND SHORTFALL

Wheat is one of the most strategic crops globally, which has always been a big challenge for many governments. Over the last few months, Pakistan's government is struggling to fix wheat prices in the country due to weak governance and mismanagement. The current year's wheat production is 25.5 million tonnes (1.2-million-tonne increase over the previous year), against the targets of 27 million tonnes (Figure 1).

Fig. 1. Wheat Production (1000 tonnes)



Source: https://www.indexmundi.com/agriculture/?country=pk&commodity=wheat&graph=production

The estimated shortfall was 1.5 million tonnes. Pakistan procured 6.5 million tonnes of wheat from this year's harvest, about 80 percent of its goal. Around 60 percent of total wheat production is retained on farms for the village and household food consumption and seed. While the government procures approximately 20-25 percent, the remaining 20 percent is available in the open market for sale/purchase. So, the government is the dominant player in the wheat market, determining prices, supply, and storage.

No import or export of wheat is allowed. During crisis (shortfall or excess supply), the government provides an exemption to trade wheat internationally. To fulfil the country's current demand, the Government of Pakistan allowed importing wheat on a subsidies basis. Pakistan's government has lifted 60 percent regulatory duty, 11 percent customs duty, 6 percent withholding tax, and 17 percent sales tax to incentivise wheat import in Pakistan. Still, things did not go as planned, and the government could not avoid the price hike.

3. DETERMINATION OF WHEAT SUPPORT PRICE

To ensure a smooth supply of wheat and incentivise farmers to produce more, the Pakistan Agricultural Storage and Services Corporation (PASSCO) procures wheat on a Minimum Support Price (MSP). This price is determined based on the excess and shortage of wheat supply in Pakistan. Through the MSP, farmers will receive a fair amount of price for their upcoming crops to invest in agricultural commodities production.

The Ministry of National Food Security and Research suggested that wheat's support price should be increased to motivate farmers to increase wheat production in the future. The Economic Coordination Committee (ECC) consulted Ministers and Special aides to conclude whether the support price should be increased by 25 percent, i.e., from PKR1400 per 40 kg to PKR1745.

***MSP Determination in India**:* The India Commission for Agricultural Costs and Prices (CACP) under the Ministry of Agriculture and Farmers Welfare recommends MSP for India's major agricultural commodities. CACP operates as a statutory body that prepares and submits reports about the pricing of products for Kharif and Rabi seasons and recommends MSP to the State and Central Governments. The State Governments submit reports to the Central Government, which takes the final decision after considering the supply/demand situation of the agricultural produce. Indian government only buys as much as 25 percent of the grain produced in the country at the rate of MSP, while the rest of the remaining crop (75 percent) is sold at the market price. Only 6 percent of the Indian farmers reap this policy's benefit as 94 percent are landless farmers. The Government of India has a mechanism in place, and CACP recommends MSP for India's major agricultural commodities.

4. COST OF PRODUCTION AND PRODUCTIVITY

The cost of cultivation (PKR. 43,312 in Pakistan) is more than double in Pakistan than in India (PKR. 16,117). At the same time, the production is 56 percent less in Pakistan than in India. So, it is essential to rationalise the inputs and invest more heavily in cross-cutting seeds and land preparation technology. Over the last five years, Indian MSP is increasing, and production cost nearly remains the same, considering its strong currency, whereas, in Pakistan, MSP is relatively decreasing.

Table 1

Historical Wheat MSP for 40 Kgs

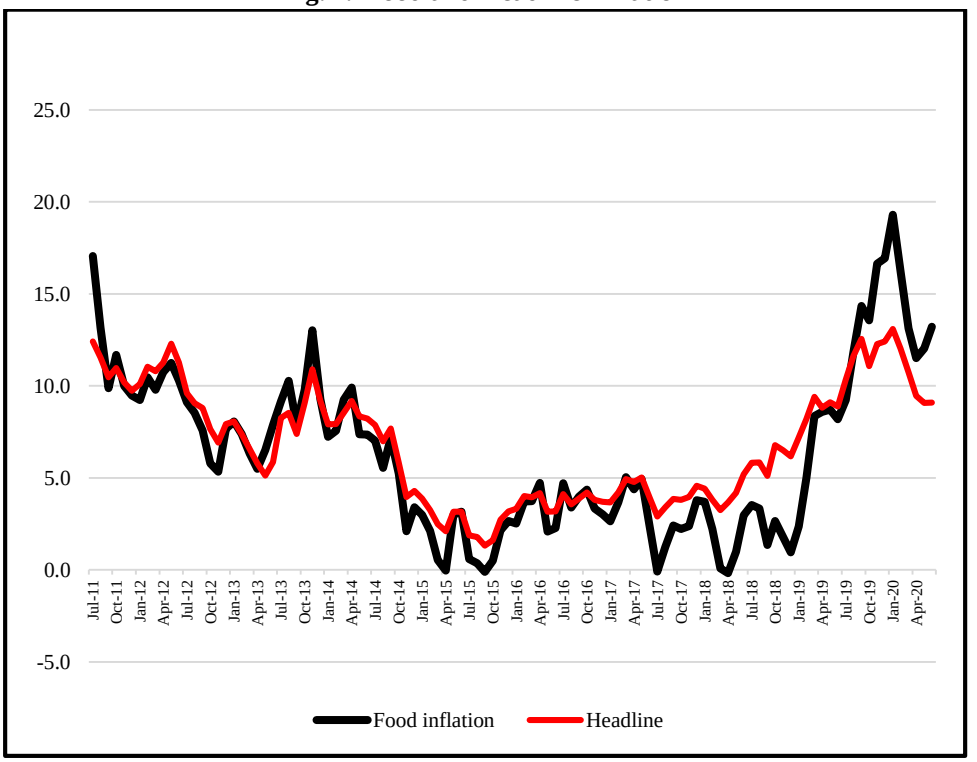
Year	Pakistan	India	(Adjusted to 1INR=2.2PKR)
2010-11	950	448	985.6
2011-12	1050	514	1130.8
2012-13	1200	540	1188
2013-14	1200	560	1232
2014-15	1300	580	1276
2015-16	1300	610	1342
2016-17	1300	650	1430
2017-18	1300	694	1526.8
2018-19	1300	736	1619.2
2019-20	1400	770	1694
2020-21	N/A	790	1738

Learning from Indian Experience: India has a well-established system to govern MSP and procure wheat. Pakistan can develop such a system to monitor prices regularly. Yet, the Indian system is skewed and gives benefits only to 6 percent of the farmers. Similarly, in Pakistan, MSP only offers benefits to less than 5 percent of big landholders. In comparison, the remaining 95 percent of farmers either do not sell wheat or even sell at low prices (exploited by middleman due to corruption and rent-seeking).

5. IMPACT OF NEW SUPPORT PRICE ON INFLATION

Food prices are rising fast in recent months, posing a possible threat to the poor's livelihood. Furthermore, food inflation remains the major contributor to the various inflation episodes over the last ten years (Figure 2).

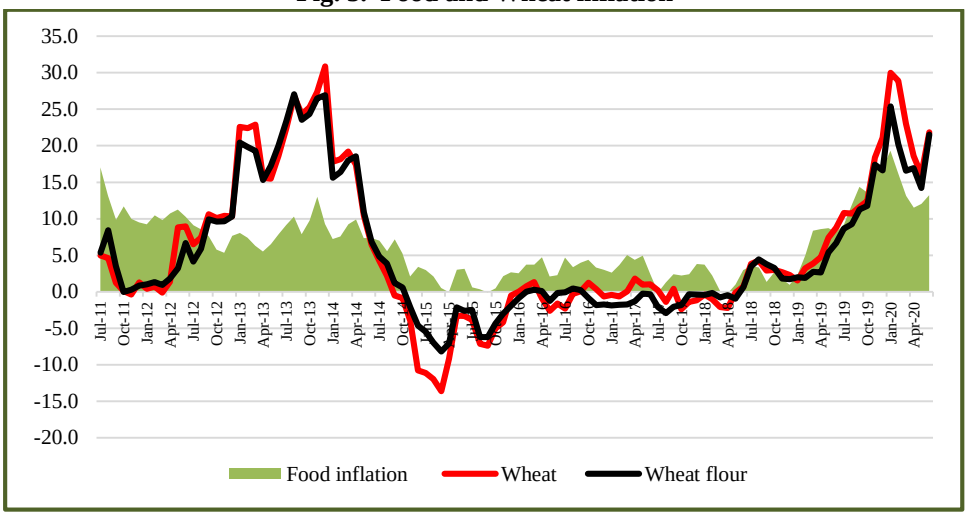
Fig. 2. Food and Headline Inflation



Source: PIDE estimates.

The wheat and wheat flour remain the primary drivers of the recent episode of food inflation. Notably, wheat inflation was deriving food inflation in most cases (Figure 3) over the last ten years. Recently, the government is going to announce an increase in the MSP of wheat. It is essential to review the inflationary consequences of any price change in the wheat. This brief aims to evaluate the impact of an increase in MSP on average inflation.

Fig. 3. Food and Wheat inflation



Source: PIDE estimates.

We find a low correlation between MSP and food inflation as compared to retail wheat prices. More interestingly, retail wheat inflation was even negative in 2014 and 2015 when the government increased MSP from PKR. 1,200 to PKR.1,300. Furthermore, the retail wheat price is much higher than MSP; therefore, we shall not see the complete pass-through of the MSP increase in inflation.

PIDE has developed several scenarios for the impact of wheat minimum support price increase National Inflation in the baseline case. Our findings suggest that if the government sets MSP PKR. 1,750 per 40 kgs., it will increase inflation by 29 bps. However, a bumper crop and good governance may reduce the pass-through on inflation and vice versa. Therefore, the government has to have reasonable control over the administrative side to have a minimal impact on food inflation.

Table 2

Pass through of MSP on Average Inflation in FY 2021

Proposed WSP PKR per 40 KG	Increase in Inflation by Basis Point (bps)
1650	22 bps
1700	25 bps
1750	29 bps
1800	33 bps

Source: PIDE estimates.

6. SOLUTIONS/WAY FORWARD

(a) Wheat or any other subsidy goes to only those farmers who own land; however, most of the farmers in Pakistan do not own lands though not eligible for Bardana—brown bags through which the Government of Pakistan buys wheat. Most of the benefits through Wheat MSP goes to middlemen and millers who operate in grey areas.

(b) PIDE has long argued that the wheat market has never been allowed to develop because of the government's excessive involvement. It is not surprising that this market exhibits a situation of excess supply or demand every few years. This has amply been seen in all countries that have government-maintained markets (for instance, the former Soviet Union and other centrally planned economics). Government wheat procurement does not incentivise small farmers, but on the cost of small farmers, mills are incentivised through MSP (Haider, 2020). The circular debt of wheat procurement is then put to ordinary man's shoulder regressive taxation. Flour mills are obligated to produce 65 percent flour from the wheat, but they do not make it and instead make other by-products, which can then be exported or sold locally at better prices. If proper record keeping is done, then millers would be required to produce 65 percent flour.

(c) The institutional problem in wheat procurement is also a big issue because of widespread corruption and rent-seeking, which increases transaction costs and uncertainty, discourages marketing investment and participation, and ultimately leads to a negative fiscal impact for the Government (Ahmad, et al. 2005). So what is the solution? The government should slowly step out of the food market and let the market function freely. The government can divert vast sums of subsidies to developing physical infrastructure and agricultural research for better seed qualities. However, to avoid extreme food price fluctuations, the government needs to monitor wheat production and availability.

(d) The government should withdraw from fixing the minimum support price for wheat, framing wheat export policy, and regulating legislation regarding support price regime. The government's role should be for encouraging R & D, monitoring quality, and maintaining buffer stocks for fine-tuning in cases of extreme shortages. The international market can readily supply wheat at short notice. With the market in place, the probability of a shortage will be minimal. Like every other county, the government will monitor and remain ready to intervene in extreme circumstances.

(e) The retail wheat price is much higher than the proposed MSP; therefore, we shall not see the complete pass-through of the MSP increase in inflation. If the government sets PKR 1,750 MSP, it will increase inflation by 29 bps. However, a bumper crop and good governance may reduce the pass-through on inflation and vice versa. Therefore, the government has to have reasonable control over the administrative side to have a minimal impact on food inflation.

(f) The government should take appropriate measures to reduce the gap between wheat MSP and retail price. The government should promote competitiveness in the wheat market to reduce market distortion costs and avoid illegal trading. The cost of wheat production is high, with low productivity in Pakistan than India and Iran. The government can tackle inflationary pressures by promoting competitiveness in the wheat market. Anjum and Zia (2020) argue that high yielding and relatively low-risk

varieties need to be introduced by involving the private sector. Knowledge-based innovations and interventions will increase competitiveness, ensure future food security, and reduce trade deficit (Anjum, 2020).

ANNEXURE 1

Determinants of Wheat MSP in India

India's government has a mechanism in place, and the Commission for Agricultural Costs and Prices (CACP) recommends MSP for major agricultural commodities in India. Every year, MSPs are announced for 23 crops in India, and the government procures only paddy, wheat, and, to a limited extent, pulses. The cost of production in India is a calculator on three levels:

(1) A2: includes such as seeds, fertiliser, labour;
(2) A2+FL, which includes the implied cost of family labour (FL); and
(3) C2, which includes the implied rent on land and interest on capital assets over and above A2+FL.

The Indian government currently adds 50 percent of the value obtained by adding A2 and FL to fix the MSP of crops, which means 50 percent of profit goes to the farmers after A2 and FL. Though if the cost of C2 is added, then the profit accounts for around 12-20 percent. Every season Rabi and Kharif, The Commission uses micro-level data and aggregates at the district, state, and country levels. The information/data used by the Commission, inter-alia include the following (*India Today*, 2018):

- Cost of cultivation per hectare and structure of costs in various regions of the country and changes therein;
- Cost of production per quintal in various regions of the country and changes therein;
- Prices of various inputs and changes therein;
- Market prices of products and changes therein;
- Prices of commodities sold by the farmers and of those purchased by them and changes therein;
- Supply related information—area, yield and production, imports, exports and domestic availability and stocks with the Government/public agencies or industry;
- Demand related information—total and per capita consumption, trends and capacity of the processing industry;
- Prices in the international market and changes therein, demand and supply situation in the world market;
- Prices of the derivatives of the farm products such as sugar, jaggery, jute goods, edible/non-edible oils, and cotton yarn and changes therein;
- Cost of processing of agricultural products and changes therein;
- Cost of marketing—storage, transportation, processing, marketing services, taxes/fees and margins retained by market functionaries; and
- Macro-economic variables such as general level of prices, consumer price indices, and those reflecting monetary and fiscal factors.

ANNEXURE 2

Cost of Wheat Production in Pakistan

Input/Activity Operations	Cost PKR./acre	Share %
Land Preparation	4,637.50	10.71
Seed & Sowing Operations	6,409.13	14.80
Plant Protection & Interculture	1,200.00	2.77
Irrigation & WCC	3,974.10	9.18
Fertilisers. FYM & Tpt/Applications	8,563.08	19.82
Harvesting & Threshing	7,348.05	16.97
Land Rent	16,750.00	38.67
Other Costs (Mark up I. Tax. Mgnt.)	2,802.00	6.47
Net Calculation Cost	43,312.64	100.00
Yield per Acre (kgs)	1,120.00	
Cost of production at Market Procurement Centre	1,586.88	
Recommendations of MSP (with a margin of around 13.2% over the COP)	1,745.57	

Source: API, MoNFS&R.

ANNEXURE 3

Institutional Mechanism of Minimum Support Price (MSP) in India

- India being an agrarian economy, has established the agriculture sector, which contributes to around three-fourths of the GDP and employs more than four-fifths of the population.
- Reforms in the Indian agricultural policy were spearheaded in the mid-1960s in the wake of the food shortages. Resultantly, the policy reforms which were followed focused on achieving food grain self-sufficiency.
- The institutional reforms which were followed to strengthen agricultural production and boost agrarian production included: land reforms, administrative and managerial changes in the sector, credit extension schemes, application of technology, agricultural research, and price support policies such as Minimum Support Price (MSP).
- Prices of agricultural produce are unstable due to informational asymmetries, lack of market coordination, and inconsistency in the supply of crops. The future supply of crops is determined by the ways prices fluctuate in the market. A farmer may decide to withdraw sowing a particular crop in the future because of the sharp fall in the current market price. The result is a sharp fall in the supply of that crop in the following year concomitant with a sharp increase in consumers' price.
- MSP helps in addressing the issue described above. The government fixes MSP for major agricultural products (such as rice, wheat, maize, bajra, pulses, etc. 24 items). Through MSP government ensures that farmers will receive a fair amount of price (fixed by the government) for their upcoming crops to invest in agricultural commodities production.

- Commission for Agricultural Costs and Prices (CACP) recommends MSP for major agricultural commodities in India. CACP operates as a statutory body that prepares and submits reports about the pricing of products for Kharif and Rabi seasons and recommends MSP to the State and Central Governments. The State Governments submit reports to the Central Government, which takes the final decision after considering the supply/demand situation of the agricultural produce.
- The successful implementation of MSP is contingent on the benefits it yields to the farmers. To ensure success, the informational lacunae should be minimum. Farmers should know the current MSP, its announcement, procurement procedure, government facilitation, and mechanisms for providing on-time payments. Secondly, it is also vital to compute and record the cost of cultivation and compare it with the MSP. This will yield if the farmer is in surplus or not. Thirdly, to ensure that farmers do not opt for distress selling, the operational procurement mechanism should be institutionalised with minimum structural inadequacies, administrative issues, and informational asymmetries.
- Most recently (September 2020), India's government has decided to increase the MSP of wheat to INR. 1975 (PKR. 4,345) per quintal or PKR. 1,738 per 40 kgs. The official data reveals that expected returns to farmers over their costs are the highest in wheat (106 percent). The official data shows that the number of farmers who sow wheat and benefited from the MSP has doubled (112 percent increase) since 2016-17 in India.

ANNEXURE 4

Institutional Mechanism of Minimum Support Price (MSP) in Pakistan

- In Pakistan, federally, wheat is procured through Pakistan Agricultural Storage and Services Corporation (PASSCO) and provincially through Punjab Food Department. Economic Coordination Committee (ECC) decides the wheat price support policy of Pakistan. ECC is a Federal institution in service of the PM of Pakistan, also the committee's chairperson. The committee proposes policies to the PM on political and economic issues.
    - The committee also defines several objectives on the wheat price support policy of Pakistan. The objectives are outlined along the axis of increasing wheat productivity, supporting farmers' incomes and providing food security through subsidies and price controls. These objectives are supported by literature that asserts that support prices protect farmers and traders and increase crop yields.
- The interventionist policy approach adopted by the Government of Pakistan focuses on input and output price regulations, aiming to stimulate consumers and producers through subsidies and tax plans.
- For protecting farmers from market price fluctuations and ensuring that consumers are provided with a stable supply of agricultural commodities, the Punjab government and the federal governments have set support prices and devised channels to ascertain the procurement of wheat. Over the years, interventionist policies have helped farmers and consumers from monopolies.

- Despite favourable results, wheat procurement, and support prices have resulted in financial burdens on the Punjab government. Wheat is purchased at a price above the international price, and the inability to sell the final product in the global market has nosedived the Pakistan economy.
- The decision to increase wheat minimum support price from PKR. 1,400 to PKR. 1,745 per 40 kg is tricky as it may cause the country to lose its competitiveness in the international market.
    - In comparison to India, the cost incurred on wheat production is much high in Pakistan. To ensure farmers' profits, the government raises the MSP due to higher production costs.
    - Subsidising wheat procurement and release guarantees higher MSP. This policy action has been practiced by the Government of Pakistan, which has put financial burdens on government finances.
    - The consumers, on the other hand, are also adversely impacted by the higher wheat prices. To reduce production costs, input subsidies can be facilitated to the farmers rather than subsides on purchase prices. The reduction in input costs will reduce output prices, which may raise farmers' profits and consumer surplus.

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Does Free Market Mechanism Offer a Win-Win Situation to Wheat Consumers and the Government?

ABEDULLAH

Government of Pakistan intervenes in wheat marketing to offer low prices to consumers and to encourage farmers by announcing support prices. Government procures about 25-30 percent of total wheat production and leaves only 10-15 percent for the private sector. This practice does not only cost Government on an average Rs.48 billion per annum, but also creates a circular debt of Rs.757 billion, implying that it is not a sustainable intervention. This policy view point attempts comparing the existing situation with free market mechanism for the year 2020. Our analysis revealed that if Government would not intervene in the market, then farmers would be getting higher prices and consumers would be enjoying at least 25 percent lower prices than the current prevailing price levels. Moreover, Government would also be saving Rs.48 billion. It clearly implies that free market mechanism could lead to a win-win situation for all stakeholders, i.e. consumers, producers and the Government.

WHEAT ECONOMY IN PAKISTAN

Wheat is the most important agricultural crop of Pakistan. It is grown by 80 percent of farmers and planted on about 22 million acres, which is approximately 40 percent of the country's total cultivated land. Punjab plays a major role in wheat production by allocating 16.14 million acres (71.5 percent), followed by Sindh, KPK and Balochistan with almost same trends in production also (AMIS, 2020). Wheat also contributes 37 percent to both food energy and protein intakes. Being a staple food, it accounts 72 percent to the food basket of Pakistan, with the highest per capita consumption of 124 kg per person per annum in the world.

A significant increase in the wheat production has been observed in the past four decades i.e. from 11 million tons in 1980 to 25 million tons in 2020, while, during this period, the area under wheat has increased from 17.2 million acres to 21.8 million acres (Figure 1). The yield was increased by more than 75 percent during the period at an average growth of about 2 percent per annum, while area was increased at about 0.65 percent per annum. This implies that improvement in technology (high productive seed) and improved management practices played a major role in increasing the wheat production-reflecting the contribution of research in agriculture sector in improving the food security situation in Pakistan. Wheat production is continuously increasing with fluctuations but growth rate is comparatively low. However, sustainable wheat production is essential to ensure national food security. But increase in population, poor wheat productivity and fluctuations in retail prices of wheat have made it challenging for the Government to achieve this goal.

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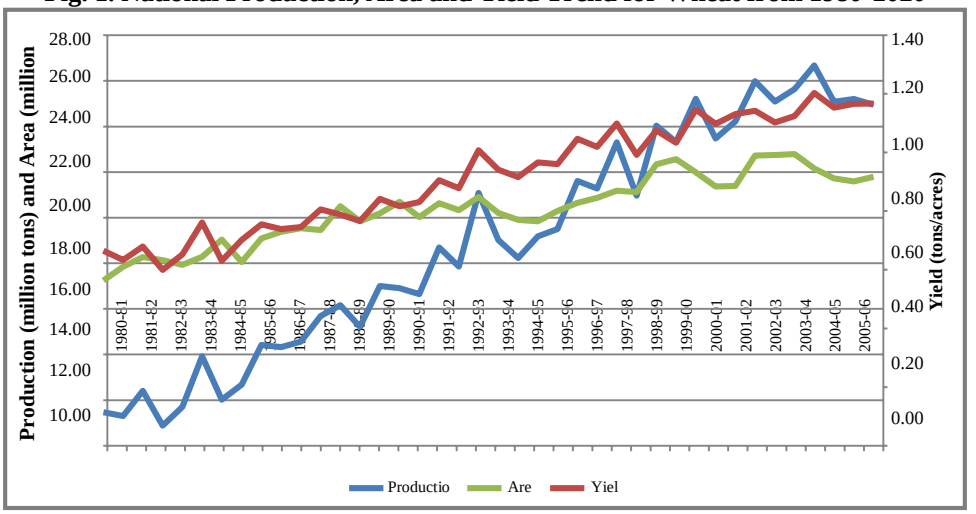
Fig. 1. National Production, Area and Yield Trend for Wheat from 1980-2020



Data Source: GoP (2020).

Wheat Production Targets and Support Prices

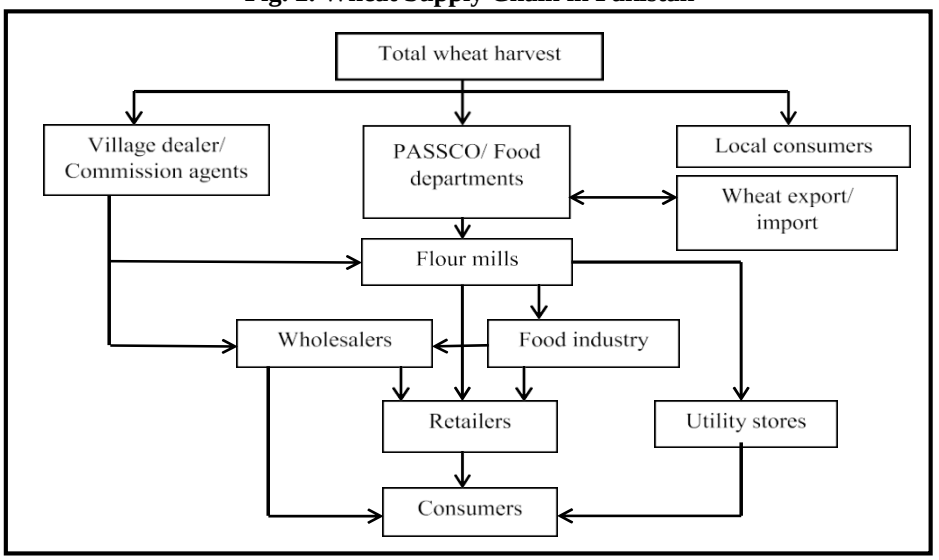
Government of Pakistan fixes wheat production targets and the minimum support price, ahead of the Rabi season. Government's Federal Committee on Agriculture (FCA) had set a wheat production target of 27.03 million tons from 22.73 million acres for Rabi (2019-20). Ministry of National Food Security and Research with the support of its allied institutions had fixed the minimum support price for wheat at Rs 1400/40kg (Rs 35/kg) for Rabi (2019-20). However, the Chairman of Agriculture Forum of Pakistan (AFP) had warned the Government that it would be hard to achieve such a big production target as farmers had planted wheat only on 21 million acres due to high cost of production and low support price offered. This indicates that Government may miss the production and procurement targets and it should plan for the alternatives to stabilise wheat supply with minimum price fluctuations well before the crisis arises.

Wheat Marketing

Wheat marketing is a multistep process that starts from sale of wheat grains from farmers' fields till it reaches to the consumers in the form of wheat flour. Three modes of supply lead from the farm; village dealer, Pakistan Agricultural Storage and Services Corporation (PASSCO) and the local consumers (Figure 2). Apart from wheat used for exports, the rest is sold to the flour mills for processing. After milling, the processed wheat (wheat flour) is supplied to various wholesale markets and retailers that make it convenient for the local consumer to buy from. A large part of this supply chain is managed by PASSCO, which supplies wheat locally and internationally.

Private traders (district/village brokers or beoparis) also buy directly from farmers. Instead of bringing directly to public procurement centres, a large number of farmers sell wheat to middlemen such as village shopkeepers and village brokers (beoparis). Village brokers (beoparis) and commission agents (arhtis) collect wheat from growers and deliver it to millers and wholesalers (Khan, 2014).

Fig. 2. Wheat Supply Chain in Pakistan



Source: Badar & Mohy-ud-Din, 2011.

After the 18th amendment, provincial Governments become responsible to procure wheat from the farmers at minimum support price and to release it to the flour mills at the fixed price. Wheat prices and movements are managed at the provincial and district levels. The farming community of Pakistan annually retains 60 percent of the wheat production for seed purpose and domestic consumption. To meet food security goal, Government ensures procuring wheat between 25–30 percent of the total production, while the remaining 10-15 percent is left for purchasing by the private sector. Provincial Governments should procure wheat according to their demand. But this requires financial resources, for which Provincial Governments are reluctant to spare especially small provinces. Finally, this additional burden comes at the shoulders of the Federal Government to procure wheat and stock it for the whole year.

Situation Analysis of Wheat Shortage

For the market year 2019-20, the demand for wheat was estimated at 25.5 million tons against the actual production of 24.3 million tons, indicated a supply shortage of around 1.2 million tons. The low planted acreage, unseasonal heavy rains, yellow leaf rust, and locust outbreak also affected the local production abruptly.

The wheat stocks, held by provincial food authorities and PASSCO, at the end of March 2019 were 4.5 million tons, which were about 38 percent less compared to 7.3 million tons in March 2018. Initially Government planned to export 0.6 million tons during 2019 but by looking at supply shortages, Government banned the wheat export in October 2019. Market was also signaling of increase in prices in days to come because private sector including flour mills started to offer higher prices to farmers than the minimum support price to procure wheat for their consumption. Therefore, PASSCO and provincial food departments did not able to achieve the cumulative procurement target of 7 million tons.

This year millers also negotiated to produce lower extraction ratio of 65:35, i.e. 65 percent wheat flour and 35 percent byproducts instead of 80:20, which lead to decline in supply of wheat flour in the market. This also aggravates the supply-demand situation of wheat flour and pushes the prices upward.

The official statement that Pakistan has missed its wheat production target by 1.6 million to 1.8 million tons generated clear signals for the speculators to hoard wheat. Moreover, it also informed international wheat suppliers that Pakistan would be a captive buyer, resulting in an increase of international wheat prices. The ongoing wheat crisis calls for smart solution on sustainable agricultural practices through free market mechanism.

Costs to the National Exchequer for the Interference in Wheat Market

Wheat costs to the Government in terms of support price, procurement, storage, and subsidising grains to flour mills. In order to procure 30 percent of total wheat production (7.3 million tons) at the rate of Rs.35/kg, Government requires Rs.255 billion (=7.3*1000000000*35). If Government would have to borrow this amount from banks at the ongoing interest rate of 7.4 percent for one year and plans to repay principal amount in monthly installments of 10 months through selling wheat to flour mills, then Government would pay interest amounting Rs.11.8 billion. Besides this, Government would require additional financial resources of Rs.36.2 billion for handling, transportation and storage costs incurred by the PASSCO at the rate of Rs.4.96/kg (Dorosh, 2012). This implies that Government would require total financial resources of Rs.48 billion (=11.8+36.2) to interfere in the wheat market for maintaining the retail price close to the minimum support price (Rs.35/kg). Government involvement in wheat marketing over the years has created a circular debt of Rs.757 billion (Suleri, 2020). This implies that Government inference is not sustainable. Such market intervention by the Government is not only costly but it also discourages the private sector to effectively participate in the wheat procurement and marketing. If Government strongly regulates the wheat market through releasing stock to flour mills for maintaining the prices at the minimum level, then private sector cannot survive as no incentives left to get involved in the wheat marketing.

However, if Government stops interfering in the wheat market and allow the private sector to participate in wheat marketing, then the cost of national exchequer, i.e. Rs.48 billion would have been transferred to the consumers in terms of higher prices. This would lead to surge the retail prices of wheat by 16 percent (Rs.41.6/kg) against Government wished price (Rs.35/kg) (Table 1). Since, the private sector was competing with the Government in procuring wheat from the farmers; they offered higher prices to farmers (Rs.40/kg). Therefore, from the perspective of private sector, the retail prices of Rs.46.6/kg would be justified. Even if we add a profit of Rs.2.0/kg of private sector then prices will remain close to Rs.49.0/kg. We believe, it is bearable for consumers because current retail prices of wheat are varying between Rs.60-65/kg. Through market intervention and putting barriers on import and export, Government create wrong signals, which lead to high fluctuations in the wheat prices.

Table 1

Retail Prices of Wheat Purchased from Different Sources

Prices paid by/to	Unit Price (Rs/kg) at Farm Gate and Fob Prices	Cost of Handling, Transportation and Storage (Rs/kg)	Cost of Freight, Storage and Transportation within the Country (Rs/kg)	Prices at Retail Level (Rs/kg)
Price of Wheat Purchased by the Government from Farmers	35	6.6	–	41.6
Price of Wheat Purchased by Private Sector from Farmers after Adding Profit of Rs 2.0/kg	40	6.6	–	48.6
Prices of Wheat Imported by the Government	44.9	–	4.5	49.4
Prices of Wheat Imported by the Private Sector	37.6	–	4.5	42.1
Existing international prices	33.8		4.5	38.3

Despite the recent signals of wheat shortage started appearing at the time of harvest (March-April 2020), the private sector was not allowed to import and thus prices continue to surge through supply-demand mechanism. On the other hand, Government also did not timely decide to import wheat, which resulted in consumer's suffering in terms of paying higher prices. If private sector is free to decide when and how much wheat to be imported, then import orders would have been placed much earlier and speculation of wheat shortage would not push the wheat prices vertically upward. Thus, prices would have been settled at much lower level than the current history- high levels. Moreover, delays in import also created signals for the international market that Pakistan is facing serious shortage of wheat and country is going to import (at very short notice) large amount of wheat to fill the gap between supply and demand. It also pushed the international prices upward compared to the normal situation.

Recent Import and Comparison with Open Market Scenario

Government decided to import 0.840 million tons of wheat in the beginning of October 2020 and also allowed private sector to import 1.09 million tons till January 2021. More than 120 importers have shown interest to participate in wheat import (ECC, 2020), implying that private sector is keen in wheat marketing if the required space is provided.

The public sector has purchased 0.18 million tons of wheat from Russia at US$279/ton (Ahmed, 2020), which is equivalent to Rs.45/kg. If we add Rs.4.5/kg freight and other transportation charges to arrive wheat at buyer's premise, then retail price will be Rs.49.5/kg. It is only Rs.0.8/kg higher than the retail prices if Government would not have interfered in the local wheat market. However, the current retail prices are Rs.60-65/kg in the market because of imperfect competition and little space provided to private

sector to operate in wheat marketing. This implies that after reaching the imported wheat in the local markets, prices are expected to decline by Rs.10-15/kg. On the other hand, private sector has made an agreement to import 0.33 million tons of wheat at US$233.8/ton (Ahmed, 2020), which is 16 percent less than the import price paid by the Government. After adding same freight and transportation charges, the retail prices of wheat imported by private sector will be Rs.42.1/kg. It is slightly higher than the retail price (Rs.41.5/kg) of locally purchased wheat by the Government but significantly less than the retail prices of local wheat (Rs.48.5/kg) purchased by the private sector (Table 1). Due to expensive wheat import by the Government, a high price of Rs.49.4/kg is expected to prevail in the local market, which is 24 percent less than the current prevailing price of Rs.65/kg.

Both the public and private sectors imported wheat at higher prices compared to the prevailing (US$210/ton) international wheat prices (Business Insider, 2020). It might be because of shortage of time that importers could not properly explore the international wheat market. If wheat would have been imported at US$210/ton, then retail prices of imported wheat would be Rs.38.3/kg, which is significantly less than the retail prices of locally procured wheat by the Government and the private sector (Table 1).

Our analysis clearly demonstrates that retail prices of imported wheat by the private sector are less than the local wheat procured both by Government and private sector. International wheat prices are slightly less than the farm gate prices in Pakistan and when we are adding the cost of handling, transportation and storage, then retail prices of local wheat become higher than the imported wheat. This simple analysis provides empirical evidence that if Government would not have interfered in free market mechanism, then retail prices would not have increased to Rs.65/kg rather maximum price of wheat would have settled close to Rs.49/kg. Moreover, Government can save Rs.48 billion per annum being spent on wheat procurement, handling, transportation, and storage to maintain floor prices.

Future Strategy

In the current year, Government strongly intervenes in the wheat market by fixing support price and releasing stock but still could not stabilise wheat flour prices. Rather prices continue to increase to almost double than the minimum support price fixed by the Government. Moreover, the benefit of price increase is neither enjoyed by the farmers nor the Government, rather it has gone into the pockets of the traders. We, as economists, certainly believe that free market mechanism will not allow emerging such super-profits for the traders. Before emerging wheat crisis, the private sector will start importing wheat to exploit profit, which will pull the price down.

It is hereby suggested that Government should completely withdraw restrictions on wheat trade and allow the private sector in buying it from the farmers and supplying wheat flour to the consumers. Moreover, farmers can participate in the wheat marketing and can stock their produce according to their future anticipations about wheat prices. They can also directly supply wheat to the market at the prevailing market prices. If at harvesting stage, local prices start to increase beyond the international prices, then the private sector will automatically be motivated to import from the international market due to arising economic incentives, which would ultimately eliminate wheat crisis and allow consumers to enjoy low prices.

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Street Vending: An Introduction and Overview

ABBAS MOOSVI

1. INTRODUCTION/ABSTRACT

The widespread phenomenon of street vending, particularly in the developing world, is a fascinating one. With gradual industrialisation, countries in the Global South have experienced significant levels of urban migration—people moving out of their rural settings in the search for better economic opportunities in closer proximity to commercial hubs (Recchi, 2020). Lacking formal education, these working-class individuals gravitate towards the informal economy, characterised by spontaneity, low (and in some cases non-existent) levels of regulation, long work hours, and perpetual improvisation. Defined as "the production and selling of goods and services in urban public spaces, which is not officially regulated by the law and is carried out in non-permanent built structures," street vending has risen to prominence in both positive and negative ways—on the one hand, functioning to fill important gaps in the market at affordable rates, and on the other contributing to congestion, pollution, and general 'disorderliness' (Recchi, 2020, p. 4).

The objective of this brief is to outline and explore the street vending trade in terms of its occupants, governance structures, operational dynamics, and determinants of success—proposing policy recommendations and prospects of the informal sector.

2. TYPOLOGIES, DEMOGRAPHICS, AND PREVALENCE

The majority of street vendors come from poor or lower-middle-class backgrounds, adopting the trade as either a means of survival or to complement their earnings from another, more central occupation. However, a substantial amount of internal inequality may be observed within street vendors—with some earning a considerable amount via petty capitalism and collaboration with established businesses as distributors and marketers (Bromley, 2000).

Despite the commonalities in backgrounds, this group is far from a homogenous one—and can be divided into four different categories. First, the 'sideline' class: these are traders focusing their activities around select events and occasions such as independence days and food festivals. They are characterised by their casual, stop-and-start approach to street vending as a way to earn some extra money. Second is the 'nomadic' class: similar to the sideline class, except that they see street selling as their primary source of income and follow temporary markets all around the year. The third is

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the 'opportunistic' class: responders to momentary spikes in demand for specific goods or services, such as particular fruits during harvest season or facemasks outside a mall during a pandemic. Finally, there is the 'traditional' class: relatively stationary enterprises that focus on a select few items that they specialise in and can be relied upon to deliver on an ongoing basis (Wongtada, 2014).

A further distinction may be drawn between small-scale, on-the-go vendors and relatively larger-scale, fixed-in-place ones: indeed, there is a hierarchical dynamic between these two groups, with the former occasionally transitioning into the latter with the accumulation of success and expansion—indicating graduation into a group that has more social capital. In India, for instance, it was discovered that over 250 street vendors were millionaires—having saved, reinvested, and expanded over the years and became formidable players in big supply chains of the country through the formal economy (Joshi, 2021).

Gender dynamics within street vending varies quite a bit, with some countries—such as China, Thailand, and Ghana—experiencing a concentration of women as the enterprise owners, whereas in the Islamic world—it is predominantly men that are involved due to religio-cultural factors that render it taboo for women to operate in a public capacity. Lastly, street vending is a lot more likely to be dominated by relatively older individuals than young ones, who are generally more educated and thus tend to opt for the formal sector. According to Wongtada (2014) the context of the Global North, race, and ethnicity also come into play—with the majority of street vendors being immigrants operating within the trade as they work to build their networks and establish themselves in the formal sector.

Fig. 1. Global Differences in Street Vending

Differences	Global South	Global North
The informal street vending size	Many street vendors work informally	A small segment of street vendors works informally
Street vendor's profile	Internal rural migrants and poor/less educated people	Immigrants
Role of street vending sector	Stable and culturally rooted working activity	Temporary occupation or the first immigrants working activity
Formal economy and informal street vending relation	(1) The system of licenses (2) The link between informal workers and the global value chains system	Conflict between regular and informal setret vendors
The different aspects dealt withy by the literature	(1) Urban policies and the street vendors' strategies of resitance (2) Both individual and collective strategies of resistance	(1) Migrants street vendors' activities and the exclusion mechanisms they experience (2) Individual strategies of resistance

Source: Recchi, 2020, p. 16.

3. ARGUMENTS FOR AND AGAINST STREET VENDING

Outlined below are the salient benefits and drawbacks of street vending, and more generally, informal trade practices that have been proposed in the literature.

Table 1

Pros and Cons of Street Vending

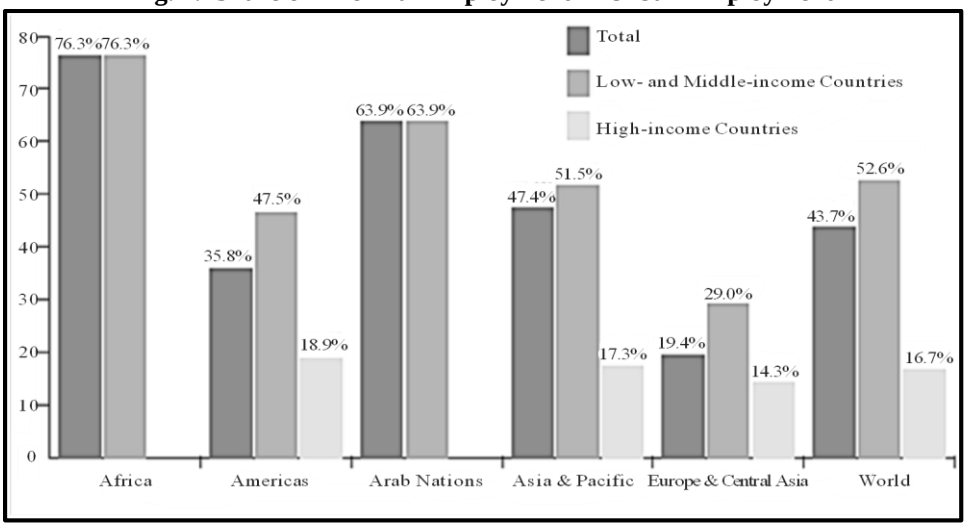
Favour	Against
Serves a crucial role in catering to demand for specific commodities at inexpensive rates, thus contributing to economic activity—and that too in flexible ways which are able to rapidly adapt to shifting market conditions.	Contributes to pollution, congestion, disorderliness, and a poor aesthetic—rendering tourist spots less appealing to visitors and leading to traffic accidents and blockages of important junctions and congregation points.
Offer crucial opportunities to struggling working class communities, usually migrants from rural settings that cannot afford setting up formal businesses, allowing them a means to provide for their families.	Transactions are generally not recorded in any official capacity, due to the absence of receipts and documentation—leading to trouble gaining refunds or exchanges if/when unsatisfactory quality is discovered.
Their generally mobile nature allows for goods and services to be purchased at more locations and times, thus expanding consumer choice.	Addition of middlemen into marketing and supply chains that can be seen as promoting unnecessary consumption and/or being exploited by suppliers.
They contribute to the formation of a lively, vibrant atmosphere in urban settings through their commercial activities—serving as occasional guides, entertainers, crimes witnesses, etc.	Frequent public health issues, especially with food items that have been exposed to various contaminants in the atmosphere during the course of the day—a problem that is made worse by the lack of access to basic facilities like water and sanitation.
Street vending is a trade just like any other, and anyone wishing to get involved should be able to as a general principle and fundamental right (to commerce).	Involvement in activities that are technically illegal and would not be allowed if formal regulations were in place—such as the sale of banned items and involvement of child labour.
Means of tax revenues for the government: either through explicit means (e.g. licensing) or implicit ones (when serving as distributors for formal businesses, expanding their revenues).	Virtually impossible to tax certain aspects of this trade, including income tax and sales tax—a general problem with the informal sector.
A significant facilitator of the development of participatory democracy and class consciousness, when vendors unite under unions/associations to represent their interests and fight for their rights.	Due to the tendency for agglomeration, street vendor 'markets' tend to generate significant amounts of trash that no one in particular takes responsibility for.

Source: Bromley, 2000, pp. 5–11.

4. POLICY, LAW, AND GOVERNANCE

Considering the fact that street vendors occupy such a large segment of the informal market, it is curious that little to no comprehensive initiatives have been taken to streamline their operations and establish formal pathways for their integration into society. Indeed, this is particularly true for developing nations: "in sub-Saharan Africa, street vendors account from 12 to 14 percent of the total urban informal employment, in India 14 percent and in Lima and Peru, street vendors represent 9 percent of the total informal urban workers" (Recchi, 2020). In Karachi, Pakistan, the informal economy employs a whopping 72 percent of the total labor force (Hasan, 2021). There are several reasons for the lack of foresight, including but not limited to a lack of data gathering mechanisms, deeply entrenched colonial-era approaches to city management, the generally fluid nature of the trade, and bureaucratic complexities within lower tiers of government.

Fig. 2. Share of Informal Employment in Urban Employment



Source: Qtd. in WIEGO, 2018.

Police officers that occupy the street-level positions, for instance, face a dilemma: they execute ambiguous policies from above with regards to street vendors or turn a blind eye to and establish covert agreements with the tradesmen in exchange for bribes that they can use to supplement their meager incomes. A considerable number of these officials do opt for the latter in these instances due to the sheer number of interactions that are necessary—at the street level—to effectively ensure compliance. In Karachi's Saddar market, for instance, it was documented that a total of Rs. 10.5 million was paid in 'bhatta' (protection money) in 1995-96 to individuals who claimed to have the backing of local authorities, particularly the police. It was a sum of money collected from street vendors to allow them to operate (Hasan, 2021). These factors render trade regulation hard to monitor, leaving ample opportunity for street vendors to create wiggle room in collaboration with officials, political figures, and even street thugs for protection and oversight. On the other hand, this is largely an unreliable strategy for the street vendors, who cannot count on any of these groups to remain loyal due to the plethora of external

factors involved. For instance, officials are constantly under pressure from stakeholders such as residents and realtors of gated communities and, more generally, elite members of society that perceive street vendors as contributing to congestion, pollution, nuisances, and an 'unaesthetic' environment.

These powerful interests will often create pressure on government to initiate anti-encroachment drives, which involve cracking down on street vendors, confiscating their equipment/property, and even harassing and abusing them as a means of clearing the space they occupy. It serves the interests of a class that wishes to privatise the public realm by creating private beaches, commercial arcades, and territories behind a paywall. The same happened in Empress Market, Karachi, during the anti-encroachment drives of 2018—with the government claiming that the cleared land would be used for luxurious restaurants and high-end museums and art galleries—thus capitulating to the demands of propertied classes and gentrifying the Saddar area (Hasan, 2021). The emergence and expansion of Defense Housing Authority and Bahria Housing Society etc., was also a paradigm shift across Pakistan's major cities, beginning in the 1980s and slowly but surely segregating urban spaces on the basis of class (Haque, 2020). What's more is that these propertied interests, especially when it comes to formal enterprises that vendors are operating in the vicinity of, will frequently take the law into their own hands—leveraging its ambiguous nature to fabricate laws and gaslight the traders into thinking they are committing a crime even when they are not.

The strategy generally tends to work, too, since most vendors are migrants from rural areas without formal education, unaware of their rights and so end up capitulating to the intimidation tactics. In this way, it may be observed "how decentralised, privatised and informalised vending management leads to a variegated landscape of street vending… that correlates more to the power, resources and influence of… private property interests than to formal laws" (Devlin, 2011, p. 60). Even where it is virtually impossible to exclude street vendors, such as tourism spots, elite interests apply pressure on authorities to impose certain conditions, including requirements to dress a certain way, sell certain commodities, and/or customise stalls in a specific theme—thus increasing costs of operation and distorting the market (Bromley, 2000). One of the most glaring examples of this in Pakistan was in October 2018, when the government ordered a ban on all kinds of street activity that was disrupting traffic and pedestrian movement—leading to the "demolition of 3,495 shops and the removal of approximately 9,000 hawkers, including 82 women hawkers, from Empress Market" (Hasan, 2021).

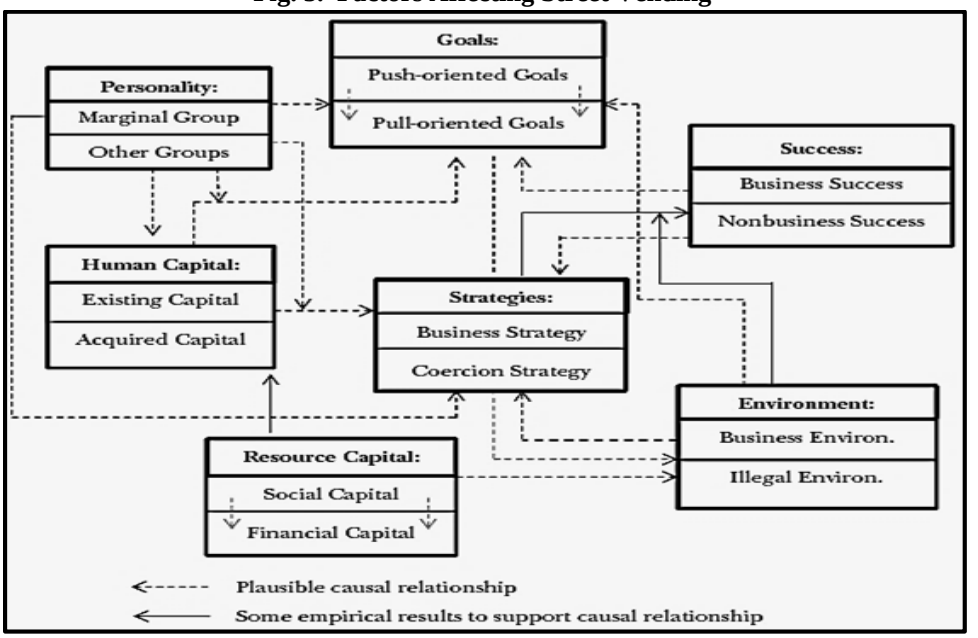
Some governance-related initiatives that have been taken to tackle the complexities associated with street vendors are as follows. The most straightforward of these is to get vendors to move elsewhere so that they are not occupying main streets. This has not had much success, however, as customers will generally be reluctant to go out of their ways to seek out goods and services from street vendors—thus leading to dwindling levels of demand and pressures on the latter to eventually return to their original positions. Another intervention has been in the realm of education and training, whereby programmes are set up with the intention of building awareness about health safety, entrepreneurial strategy, and access to credit facilities. However, these programmes are rarely sought out by street vendors, who do not trust government officials enough to believe they have their best interests at heart—leading to low attendance levels. Such schemes' failure has led analysts and policy officials to take a step back and rethink their strategies to focus more on general commercial activity within

urban contexts (in which street vendors are a significant stakeholder) rather than exclusively focusing on the informal market (Bromley, 2000).

In Pakistan, a draft bill on the protection of street vendors titled the Street Vending Bill has been prepared by the Pakistan Institute of Development Economics, Centre of Street Economy, and the Social Protection and Poverty Alleviation Division. Although long overdue, this is a step in the right direction—and broadly covers the following facets:

- Discretionary powers of various authorities in relation to street vendors.
- Introduction of the concept of town vending committees, with 50 percent representation from vendors.
  - These committees will include trader associations, NGOs, community-based organisations, local government representatives, and vendor associations.
  - They are to conduct a comprehensive survey on the street vendor community and chart out a framework for identifying vending zones.
  - Awareness building of the rights of street vendors, along with assistance in case of any violations, is a core responsibility of committees.
- Designated areas for street vendors, authorised through vending certificates costing Rs. 500/month.
- Arbitrary intimidation and confiscation of equipment from vendors to be punished with a term of one month, along with a maximum penalty of Rs. 20,000.
- With the assistance of vending committees, local government authorities formulate a policy dedicated to microcredit facilities targeted at street vendors to facilitate their operations.

Fig. 3. Factors Affecting Street Vending



Source: Wongtada, 2014, p. 69.

5. DETERMINANTS OF SUCCESS AND RESISTANCE

Despite the various pressures on street vendors to exit their trade, they have demonstrated an incredible ability to adapt to the situations imposed on them. They have thus come up with flexible individual-level and collective-level strategies to work around the constraints, a laudable feat considering they are compelled to generate plans for the safeguarding of their enterprises while simultaneously ensuring that they are turning profits. Bribing, as already discussed, is one of these strategies. Some others include structuring work shifts around locations and timings that are relatively less monitored—and reducing the quantities of goods carried at any given time in order to minimise loss/damage in worst case scenarios. They may also temporarily move to different locations and form networks with other vendors to "support each other, for example by sending messages or adopting communication signals to prevent eviction from city authorities" (Recchi, 2020, p. 15). This sort of collaboration is common in Karachi, Pakistan—where vendors pool resources to purchase certain kinds of services—such as private security and sweepers—that benefit them all and streamline their operations (Hasan, 2021). These collectives may sometimes become formal associations that can engage in the political sphere to demonstrate and protest—raising their voices to demand the right to operate more freely. With agglomerations, these vendors can establish relationships with influential figures such as politicians and non-government organisations for support and legal backing (Recchi, 2020).

Furthermore, it has been documented that the most successful of street vendors possess certain personality traits—such as "the need for achievement, risk taking, innovativeness, autonomy, locus of control, and self-efficacy" (Wongtada, 2014, p. 64). A fair number of them also rely on their social networks—including established friends and family members from the formal sector—for social leverage and even financial support. The latter is crucial, as banks and other formal means of attaining loans are invariably closed to most street vendors due to their lack of education (which prevents them from procuring formal documentation) and inability to offer collateral. Moreover, an ability to overcome adversity has also been consistently observed in the more successful street vendors—these have to do with long working hours, coercion from authority, risk of being mugged, health concerns relating to poor hygiene, competition from other vendors as well as formal businesses, and hostile/derogatory citizens. Therefore, a combination of factors needs to be taken into account by street vendors at any given point in time—constantly adjusting, maneuvering, and innovating as per the demands of the situation. A summary of these factors is illustrated in Figure 3.

POLICY RECOMMENDATIONS

This paper has attempted to offer a broad overview of the street vending trade around the globe, particularly in the developing world—where it is only in recent years that governing authorities have begun to grant it appropriate attention from a policy point of view. In order to take these nascent initiatives to a higher level, it is crucial to understand the fundamental building blocks of street vending, the informal sector, and urban management more generally. The following is a proposed set of recommendations that may serve as a launching pad for that purpose.

Any discussions about policy perspectives on street vending and urban informality are futile unless the *don'ts* aren't laid bare—these are initiatives and approaches that governments around the world seem to be pursuing but to no avail.

Firstly, anti-encroachment drives. These efforts to coerce vendors, through intimidation tactics, into clearing the streets have never been practical, and only prompt them to move temporarily—to return a day or two later. The reason for this is that a complex set of supply and demand factors are at play at any given time, with vendors serving as the go-to provider of essential commodities—particularly for working-class communities that rely on the budget options they offer. For instance, it has been documented that the vendors of Empress Market in Karachi are intimately tied to the import and distribution channels of several important commodities, including dried fruit, tea, clothing, and pet birds. Further, customers and other stakeholders that were interviewed on the matter claimed to have lost access to important sources of goods and services for their daily use (Hasan, 2021). Merely getting rid of vendors and confiscating their assets, without considering how the demand for their products is going to be met, invariably leads to frustration on the part of consumers and violence and harassment in public spaces. This disturbing sight only fosters a fearful environment in the city rather than resolving any problems.

Secondly, top-down approaches to 'tackling' street vending. The nature of the informal sector is such that there is a plethora of information, activity, incentives, and stakeholders involved in its ecosystem—which officials are generally unaware of. Arbitrarily deciding upon a 'policy', without involving the actual players in this complex trade will always be a recipe for disaster. For instance, the 2018 anti-encroachment drives at Empress Market, Karachi, triggered a wave of crises—with jobs lost, vendors unable to pay rents for their homes, becoming deeply indebted, falling into depression and misery, and having to resort to begging on the streets to survive. It is estimated that this one initiative alone led to the elimination of approximately Rs. 5.5 billion (Hasan, 2021). These kinds of rigid, illiberal, and one-dimensional approaches ought to be abandoned.

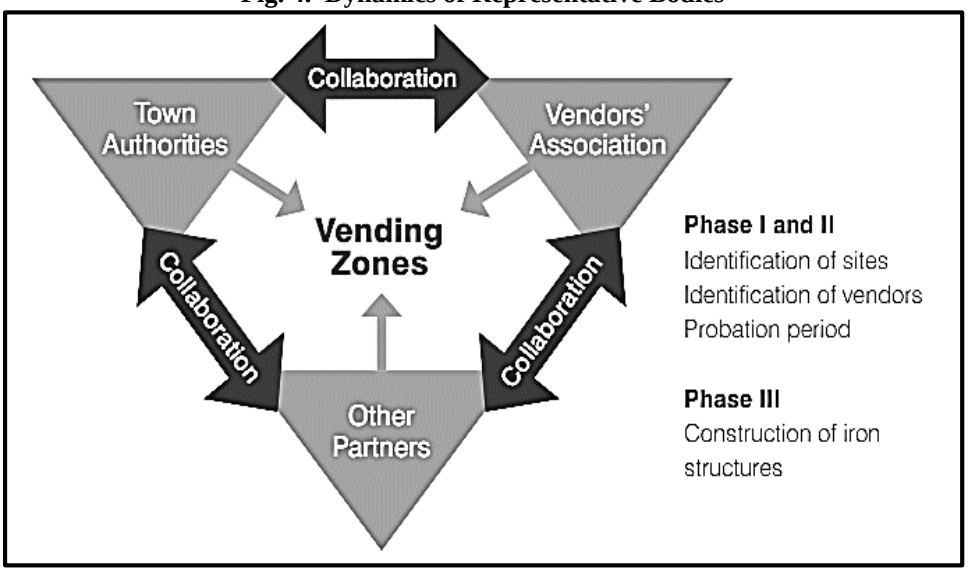
What, then, is to be done?

Cultural Change: All good policy begins with an acknowledgment of empirical reality, in all its complexity. Common perceptions of street vendors, particularly in the developing world, are negative in their nature—whereby traders are seen as dirty, lousy, rowdy, clumsy, suspicious, threatening, etc. This must end, and street vending should be seen for what it is: a crucial peg in the economic system of poor countries and a valuable service to countless people, as well as a driver of culture and tradition. Indeed, many areas in Karachi (and urban areas in Pakistan more generally) are known for the food, products, festivities, etc., that take place there—all of which are intimately connected to the contributions of the flourishing street vending trade (Hasan, 2021). Rather than focused around how to deal with the 'nuisance' of street vending, policy ought to be based on how to foster inclusive spaces that work for all urban stakeholders. On a broader level, urban planning must be rethought to disincentivise excessive car use, replacing it with walking/cycling friendly cities in which people travel via public transport services. This, along with rethinking social taboos such as women engaging in street vending is crucial—as it is a means for families to drastically increase their earnings in the developing world, as mothers begin to operate stalls from home alongside attending to their children.

Infrastructure: One of the primary bottlenecks to street vending is a lack of infrastructure, fuelled by the tendency for non-inclusive public spaces—particularly for the poor. Vendors lack access to basic infrastructure, in the form of water, hygiene, and sanitation amenities. These lead to time wastage, rising operational costs, and health hazards—especially for those dealing in food items. City authorities ought to invest in high quality, well equipped public bathrooms for the vulnerable. Furthermore, the provision of trade infrastructure, in the form of carts, stalls, tables, shelter, paved surfaces, etc. ought to be made available for budding street vendors. A fee may be levied for purchasing/renting these, thus helping raise revenue for city authorities and streamlining the procurement process for vendors. This has historically even been pursued, albeit unsustainably, as policy in Pakistan—with the Ayub Khan government making available kiosks for vendors and small enterprises to rent out and mayors Naimatullah Khan and Mustafa Kamal demarcating zones for vending and facilitating traders by constructing cabins and shops for their convenience (Hasan, 2021). In more recent times, the Ehsaas Rehribaan initiative of the Pakistan Tehreek e Insaaf government has made inroads into street vending, offering traders carts and even enrolling them in training programmes to upskill them and facilitate the market through the fostering of an enabling environment. (PASS)

Microfinance: Another commonly experienced hurdle for street vendors is a lack of financial resources. Since most of these individuals lack formal education and come from poor backgrounds, they are unable to procure documentation and offer collateral for formal loans from banks. Therefore, they rely on their social networks to kick-start and preserve their enterprises, which is invariably limited in its scope. Government loan schemes that are tailored for street vendors, therefore, ought to be thought up and advanced—an initiative that may assist in documenting the informal market better by allowing for more rigorous data collection, thus adding an element of formality to it and designing context specific policy objectives.

Fig. 4. Dynamics of Representative Bodies



Source: Kumar, 2012.

Committees and Associations: There is a crucial need to approach policy in a collaborative way, involving vendors and their customers: as well as other stakeholders like formal businesses and civil society organisations—reason being that information is always diffuse, multifaceted, and incredibly complex. One way to deal with this is to establish intermediaries, in the form of town vending committees and street vendor associations, between the government and the traders in question. NGOs may step in at this juncture and take on the role of data collection and vendor mapping, identifying hotspots and forming network linkages between the various stakeholders. This approach has shown promise in places like India, where these collectives serve crucial functions such as representing the needs of their members and customers, negotiating terms of operation (establishing timings/locations for trade, adhering to cleanliness standards, etc.), developing networks and relationships with key stakeholders such as the police and local political figures, and fostering a disciplined, organised structure of management for their collectives which allow for a better ability to adapt to changing circumstances and reduce the likelihood of evictions and harassment. As mentioned earlier, Pakistan is also pursuing legal measures (through the Pakistan Street Vending Bill) to facilitate the creation and maintenance of these kinds of committees to educate vendors about their rights, protect them from harassment, and bring various stakeholders together in order to facilitate trade.

Legal Protection: There is a dire need to draw up broad sets of overarching rules and procedures for street vending, which can function in an official capacity to orient the informal market in a manner that is efficient, inclusive, and productive. This need not be in the form of a long laundry list of regulations that are hard to keep track of and can be leveraged by powerful interests to intimidate vendors, but rather a low-resolution set of guiding principles that seek to integrate and harmonise the informal economy with other urban activities (Ehrenfeucht, 2016). India's bill, entitled 'Street Vendors Act 2014' can serve as a general yardstick in this regard. The law makes provisions for town vending committees (outlining their roles/responsibilities and minimum presence per zone), allocates specific zones for street vending, procedures for attaining licenses/certificates along with conditions for their cancellation, penalties for failing to meet the bill's stipulations, and the establishment of a formal authority dedicated to dispute resolution. Although implementation of laws such as these is a challenge, it is important to establish standard operating procedures that are backed by law so that those involved in this trade can seek out this information and attain clarity on their rights. The proposed Pakistan Street Vending Bill mentioned earlier is a much needed start in that direction, but it is certainly true that much more attention needs to be paid in further charting out the complexities and nuances of the trade in a manner that is inclusive of all stakeholders and attempts to integrate rather than dictate from above.

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