





DEALING WITH PERMANENT CRISIS: INDUSTRIALIZATION, EXPORT, IMPORT SUBSTITUTION AND A CASE FOR A ROBUST INDUSTRIAL POLICY

July 2023

Executive Summary

The objective of this paper is to study how Pakistan may address its enduring economic instability through a plan to industrialize.

It discusses:

- > The requirements of industrialization i.e., what does it take to industrialize.
- > The constraints faced by the manufacturing sector and how to identify them (the process of deciding which incentives would advance industry).
- How to stimulate manufacturing and exports through a well thought out industrial policy. This paper proposes:
- An institutional design to plan and implement an industrial policy to avoid costly mistakes made in the past.
- The criteria to guide government to select activities or new products for extending incentives and the nature of those incentives.
- > A list of industries for government support to boost exports and jobs.

In past Reports, IPR has analyzed the causes behind Pakistan's enduring economic troubles. Based on government data, the reports revealed aspects of our economic performance never before discussed in the public space.

They showed that GoP was mistaken in the way it went about its effort to regain macro stability. Government had not grasped the elemental truth behind the country's economic malaise. In simple terms, it boils down to carefree borrowing without investing it to enable GoP to repay the debt.

Our greatest vulnerability was the external account. It resulted from ever growing debt servicing needs. It was also caused by having to import even trivial goods from abroad. Even in times of huge capital inflows, no one thought of increasing domestic investment and production. Exports plateaued.

Thus, we tried to fix the weakness of the external account by borrowing more. The cause of the economy's distress became its remedy. And so, we piled debt on debt. It worked in the short term. But it was certain to end in distress. The simple truth that every debt incurred must have a plan to repay it was lost on our leaders.

Uncertainty caused by frequent economic crises is debilitating and demoralising. The cure has turned out to be worse than the malady. Our economic break down is a failure of politics. It is the inability of our leaders to imagine a self-respecting society.

For most of the last ten years, economic growth has floundered. A year or two of moderately high growth is followed by an economic crisis.

Sustained growth comes from "structural change with continuous technological innovations, industrial upgrading, and improvement in infrastructure and institutions." That is the essence of structural transformation, a key agent of development.

It needs investment in HR, infrastructure and better governance. With the present stock of public goods, tech innovations and industrial upgradation is not likely. Pakistani firms cannot move up the value chain. Firms must first be profitable at the present level of technology and gradually climb up.

With debt flows as GoP's main focus, public or private investment lost priority. Manufacturing, quality of human resource and infrastructure languished. These are determinants of industrial and economic progress. GDP growth, based on increase in manufacturing output and production of new and complex goods, builds a resilient and strong economy. Industrialization has a well-established nexus with growth.

Pakistan's industry fell behind its comparator economies. We celebrated a year or two of moderate GDP growth of 5 to 6% without knowing that it came from one time spending. We did not implement a robust industrial policy to boost production and diversify manufacturing.

Because of the weak economic indicators, the approach at present must be incremental with initial focus should be on sectors that do not have high need for energy or new infrastructure.

Investment in industry must have a lasting effect on growth. An important priority should be to accelerate structural transformation. Pakistan's efforts to industrialize have not bred sustained growth. Investment incentives to IPPs, auto assembly, or construction have taken away scarce resources from manufacturing for export.

Government intervention is a process of discovery. Intervention does not always succeed. Its success depends on how well the policy matches industrialization needs (not just the investor's needs). Also, whether those industries have a lasting effect on growth. That comes from new investment leveraging capabilities for production of ever new and more complex goods, resulting in a virtuous circle of sustained growth.

The role of learning has been critical. In East Asia, with learning endemic, firms make constant effort to discover and improve. Studies show that the fundamental barrier to sustained development is local capabilities. That comes from human capital accumulation and physical assets and with a culture of excellence.

By 2050, Pakistan's population may reach 450 million. Each year, over 2 million young people enter the labour force. Endless political volatility and economic chaos cannot provide them jobs or offer any hope. We must change the approach to economic policy to avoid disorder.

Industrialization needs the state's guiding hand through an effective industrial policy. Its planning and implementation require rigour and discipline. There cannot be exceptions or favoritism.

More and more we find how weak is the idea of 'comparative advantage'. Public and private investment makes for a dynamic comparative advantage. Industrialization comes by acquiring "mastery over a broader range of activities" instead of concentrating on what one does best.

Why is industrialization important? Because it has a nexus with growth. And why is production of new and more complex goods important? Because research shows "a connection between a country's export mix and its level of development and growth".

This move up must be gradual. For an economy stuck with producing low tech products it is not easy to move up the value chain quickly, as the economy does not have the human and physical capital to support the manufacturing of complex goods.

How should Pakistan proceed? Planning and implementing a strategy for industrialization: Pakistan must set out a major national development strategy with the broad goals of socio- economic change. Making an all-encompassing announcement is morale boosting for a despondent nation and will build the confidence of citizens and firms. Pakistan has been left behind on many fronts and there is lots to do.

Industrial policy should be a key component of this strategy. It should also have three other areas: a 'technology policy,' a 'rural uplift programme' (taking cue from China, South Korea, Japan and European economies, in their early stages of development), and an 'education and skills programme'. The latter three policies also feed into upgrading the economy's industrial base.

Such a comprehensive national development programme needs close involvement of top leadership. Even if their capacity is wanting, there would be gradual 'learning by doing' and build up of political capacity, at all levels of government. The trick lies in sincere, fevered and total engagement of the leadership, without compromise.

Designate an organization to plan and implement the policy. A reconstituted Planning Commission, with a larger number of members, whose head is the PM could be tasked. The members would form an advisory. They must come with varied expertise and from diverse background. The organization would need major human resource investment. It must have leaders in several areas of industry, in rural economy, and technology and education policy with clear goals and responsibilities.

This must be announced as a major national development programme by the PM on the lines of many successful initiatives announced by world leaders:

- In Malaysia, the National Economic Policy of 1971 was followed in 1981 by Mr. Mahathir's thirty-year vision.
- In China, Mr. Deng Xiao Ping's three step development strategy was key which China overachieved in each phase. Currently, Secretary General Xi Jinping's modernization of industry, technological upgradation and self reliance have become that country's key priority in a fast changing world.
- In the last three years, USA has announced three major industrial policies in the shape of the Infrastructure Investment and Jobs Act with an investment target of \$1 trillion, the CHIPS and Science Act to boost American research, development and production of semiconductors, and the euphemistically named Inflation Reduction Act, 'which will invest \$391 billion in energy security and climate change' (White House).

Pakistan's economic plan must define a development role for the state. It must clarify when the state would intervene to fix market failures. When and how would the state lead to move the economy into new areas. It must also identify the areas from where the state must exit and let the markets work. The private sector must have clarity about where and how much government help to expect. And it gives the government a roadmap of where and how to intervene. This will also help in warding off special interests.

Institutional design for a robust industrial policy:

A rigorous institutional set up will improve the chances of success of the industrial policy. Contrary to common belief, industrial policy is not grant of incentives here or to amend a regulation there. That is a policy to serve special interests.

Industrial policy is essentially a process to determine the areas where policy action is most needed and would make the most difference in diversifying into producing new goods. They should be in activities that crowd in investment in new slightly more complex products.

- The main purpose of industrial policy is to diversify the economy and create new types of comparative advantage. Incentives ought to focus on economic activities that are new to the domestic economy. The policy should target investments that expand the range of capabilities of the home economy.
- It must have specific benchmarks/criteria for success and failure. Incentives under an industrial policy, like most other areas of public policy, would not always show desired results. Recipients of subsidies can game public agencies and continue to receive support despite poor outcomes. There must be a clear idea of what constitutes success and how to measure it. Receipt of further subsidy must be contingent on proven success.
- There must be a built-in sunset clause. One way to ensure that government does not commit resources endlessly, especially to those activities that are no longer paying off is to phase out all support by default after say 5 to 7 years.
- Government's help would take the shape of tech support through R&D, training or preferential capital. Or government may assist with helping simultaneous investments required to build the product, e.g., give one time subsidy to private refrigerated transport services for distribution of orchids (an example discussed in the body of the paper).
- How government will help is also a process of discovery. It must consult with private investors to decide what works.
- The authority for carrying out industrial policies must be vested in organizations with demonstrated competence. Most government departments have pockets of competence. They may be given the responsibility for industrial policy activity. Orientation and training would reinforce these pockets.
- The implementing agencies must be monitored closely by a principal with a clear stake in the outcomes and who has political authority at the highest level. The principal has internalized the agenda of economic restructuring and shoulders the main responsibility for it. This would guard against private capture of promotion activities.
- The agencies conducting promotion must maintain channels of communication with the private sector. This is a delicate matter. It is not possible to target the right activities with right incentives without deep knowledge of the industry, which the private sector has. Thus, consultation with entrepreneurs is important. Yet, too close a relationship could lead to collusion. That is why the role of the principal above is important. For the government to develop the capacity to identify business needs, there should be 'coordination and deliberation councils' for consulting with experts and entrepreneurs. This way it would gain information about where and how to help. There will be several councils for different industries or activities.
- Some promoted activities will not succeed. Our goal should be to minimize the chances for mistakes. Yet, that should not make government risk averse. So, the primary goal must be to minimize the costs of the mistakes when they do occur. Performance criteria and sunsets would build in circuit breakers.

How to formulate a successful Industrial Policy:

- Government must help activities and not sectors. A focus on activities or process 'facilitates structuring the support as a corrective to specific market failures instead of generic support for this or that sector.' Rather than offer investment incentives, say, for tourism or call centres, government programs may subsidize bilingual training. Similarly, government R&D may help farmers improve agriculture productivity or for firms to adapt foreign technology to local conditions. Cross-cutting programs such as these have the advantage that they span several sectors at once.
- Subsidy must go to activities that have positive spill overs. That activity must have the potential to crowd in other, complementary investments or generate informational or technological spill overs.
- Industrial policy must be rigorously thought through. Its goal is industrial transformation. Activities selected for government support must fit that important goal. Otherwise, we will have policies suggested by individual firms, foreign experts or our own bits and pieces approach.
- They have harmed our economy. IPPs, incentives for the construction sector, and protection to auto assemblers are obvious examples. Similarly, the plan to make mobile phones in Pakistan failed. Payment of a large amount in subsidy is yet to achieve the desired results. Such dissipation of resources takes away funds from productive manufacturing, R&D or training. Lobbies develop, committing government to endless support at the expense of taxpayers. The opportunity cost is high as the money could have supported other industries.
- Pakistan has the tendency to readily accept all foreign advice. As in East Asia, the country must have a home grown industrialization plan, owned by the leadership. The gradualist plan must be in line with our present stock of technology, HR and capital.
- Important findings from past research inform that "not all goods are alike in terms of their consequences for economic performance. Specializing in some products will bring higher growth than specializing in others." As complexity of products is a predictor of prosperity, Pakistan must try to manufacture products that are more complex than what it makes at present.
- Yet, complexity depends on the ability of an economy to build networks of individuals with diverse specializations. The networks needed for computers is vastly more complex than those needed for making T shirts. So, it is hard to move quickly to products that are too complex for the economy. Shifts must be incremental.
- Stiglitz advises emerging economies to focus on diffusion of technology. Government has an important role in this by building physical and HR capital and accessing technology.
- It is possible to quantify the complexity data and rank economies on an index. Pakistan's economic complexity has not improved for many years.
- Each country's exports also fit into a product space, a theoretical concept. The product space shows goods the economy makes and exports.
- Surrounding the products it exports, are 'nearby products.' These are products that it does not make or export yet, but which need similar knowhow to produce as the products being exported already. It is more realistic for the economy to move to these new products.

- These indices and quantitative measures offer a map of possible new products. This is a guide for entrepreneurs to pioneer new industries. It especially helps government decide on what areas to target to facilitate diversification.
- Why are these nearby products not being made? That is because the investor is uncertain about the cost and benefits of making the new product. While the products are standard manufactures for other economies, they need tinkering before they are adapted to Pakistan's conditions.
 - They might need other investments to be made simultaneously, to profitably make the new products, coordination externality.
 - Or the entrepreneur is unsure about the feasibility of manufacturing the product. If it is a success, imitators will share the profits while only the initial entrant has borne the discovery cost. On the other hand, if the new products fail, the loss is his to pick, i.e., information externality.
 - So, government must help with making the nearby products. It is critical to ensure that new products made with government help upgrades the economy's knowledge base.

Before we list some specific findings and recommendations for Pakistan, there are two important concepts to bear in mind in implementing Industrial Policy. They are Economic Complexity and Product Space.

An economy's national income closely follows the level of economic complexity. As complexity of an economy grows, GDP per capita rises. It is not easy to build complexity. Each product needs a network of different kinds of knowhow to produce them. Jet engines or computers need more knowhow, or more complex networks, than making T shirts. More complex economies make a diverse range of goods and those less complex specialize in a few products. Pakistan's effort must be to gradually diversify its range of goods.

Where an economy's exports lie in the Product Space determines which new products it may move into with ease (figures in main body of report). Research shows that countries diversify by moving preferentially into "nearby" goods in the Product Space. The nearby products are those that need capabilities that the economy already has. "Countries tend to move from the products they know how to make to others that are not too far away in terms of knowhow". This is an important idea to bear in mind as we move to the subject of how Pakistan can move forward.

Ricardo Hausmann studied Pakistan's structural transformation. He finds that:

- > Our economy specializes in relatively unsophisticated exports.
- For decades, it has not progressed to export new and more complex goods and consequently has fallen behind even those economies that it bettered in the past (Thailand and Sri Lanka). In 1960, Pakistan's exports were more sophisticated than of those two economies.
- Pakistan's dependence on textile goods and apparels is high. The capabilities needed to produce them have few alternative uses.
- Within the economy's present capabilities, Pakistan has exploited the related opportunities. So, production of new goods requires a jump in the economy's capabilities.

- Pakistan has not explored the product possibilities that its comparators has. Because Pakistan has fallen way behind others in investing in human resources and essential infrastructure.
- Though Pakistan's GDP per capita was at a comparable level to India and Indonesia (in 2010), it exported less sophisticated goods.

Pakistan has not invested in physical and human capital to cause factor accumulation to produce new goods. That is ground to cover for Pakistan. As each product needs specific inputs, it is easier to move to nearby products that need the set of infrastructure, institutions, and human capital specific, that textile and garments have. But this set of inputs that Pakistan has can be used for not many other products and the economy has exploited most opportunities that existed. To go to new products, Pakistan must add to its set of capabilities.

Hausmann recommends 'low hanging fruits', which is a list of industries where there is some manufacturing at home but virtually no export. The economy has the capability to make them competitively, perhaps with some improvement. The main paper gives the list. While it is important to focus on low hanging fruits, they would only make a modest increase to exports.

Hausmann also lists industries at the next level of distance. They need additional capabilities. Succeeding in them is more difficult but also more rewarding. Moving to new parts of the product space can be productive. Once an economy starts a new activity, other opportunities become feasible.

Pakistan has other issues to address. Among its comparator economies, it has the highest population growth rate. Yet it has the lowest rate of secondary school enrolment. How to gainfully employ the large number of unskilled young people entering the workforce? Hausmann lists 25 industries that are unskilled labour intensive and are also nearby products.

Moving ahead to build the industries in the three lists above requires government to discover and decide the best incentives for their advancement. They need detailed study, at the lowest disaggregated level, through consultation and analyses.

This paper also recommends import substitution. The industries identified provide key inputs to other industries. They not only reduce the import bill, but their reliable supply would boost production in other industries.

GoP may source a technical assistance to help Pakistan implement the strategy described above. The assistance may i. help design institutionalizing of the consultation process, ii. creation of institutions designed to search the longer strategic jumps and iii in setting up of industrial zones. The output must not be a study but a plan to implement. The consultant must be of Pakistan's choosing should be in Pakistan for at least three years.

Dealing with permanent crisis: Industrialization, export, import substitution and a case for a robust industrial policy

For decades now, Pakistan has done all it takes to regain macro stability. Yet, the economy has stayed in crisis. In fact, the indicators get worse every year. Our economic path defies reason because Pakistan's best and brightest have been at the economic helm. Could they have divined policies that impoverishes our own people? That is clearly not likely. Or have they mindlessly hopped from one crisis to another merely wanting the economy to survive? It is hard to say. No one has stayed in their job long enough for us to judge. What we know is that apathy to economic problems has been widespread. Also, political instability hardly allows time to the leadership to focus on much other than saving their government.

Yet, our economic collapse is a failure of politics. It is the inability of our leaders to imagine a self-respecting society. Depending on aid is the norm. Every aid sought, every loan signed is celebrated as an act of valour. The people of Pakistan feel dispirited and lost by the eternal sight of their leaders beseeching and imploring other governments.

With interest rates high, Rupee in constant fall, indirect taxes creeping up, and demand curbed by prices, the economy should have stabilized. Whatever Pakistan has done has not helped. That the cure has turned out to be worse than the malady has not stopped us from continually trying the same remedy.

For years, GoP's effort to stabilize the economy has been sporadic at best. It acts after the crisis has set in. In fact, Pakistan moves only when rapped on the knuckles by the IMF. So, the cure begins after the ailment.

Also, once it tides over the immediate emergency, GoP does very little to address the underlying malaise that causes the crises. "The social cost of instability is enormous"¹. The uncertainty caused by frequent economic crises diminishes business confidence and is costly for firms. It is no surprise that the economy has failed to meet its obligation of more jobs, exports, and prosperity.

A major reason for Pakistan's continued uncertainty is that it no longer considers investment a priority. Thus manufacturing, quality of human resource and infrastructure have languished. These are all key for economic growth. This situation has happened despite massive inflow of capital in the last 20 years. Borrowing without investing does not equip the economy to repay its debt. Hence the frequent crises.

There have been a couple of initiatives to stimulate growth, though with no lasting effect. CPEC now seems an opportunity lost. Other initiatives such as a special deal for the construction sector may have come at the expense of investment in manufacturing.

¹ Joseph E. Stiglitz, Industrial Policy, Learning, and Development, page 28 Chapter 2 of the book The Practice of Industrial Policy: Government—Business Coordination in Africa and East Asia, John Page (ed.), Finn Tarp (ed.), Published: 6 April 2017

The inability to grow economically and collect taxes can keep countries trapped in a cycle of aiddependency, DFID. Both improved GDP growth one time, as any spending would. But they did little to spur long- term growth. The downside of such half baked ideas is that they create lobbies. The lobbies

resist reforms as their interests become deeply entrenched. The cost of policy mistake is thus very high. Both initiatives have exacted a high cost on the economy. Such investment do not boost exports or enable an economy to repay external debt².

While GoP has for years recited the mantra of private sector growth, it has not followed words with action. Whether large or small, businesses suffer from a lack of capital, capricious and fickle policies and their flawed enforcement, and weak supply of public goods³. At the next level, GoP has done nothing to work with the private sector to understand and remove the externalities that inhibit investment.

This is usually attributed to elite interests and absence of long-term planning. In this paper's view, lack of clarity about the role of state in development is a more important reason. It is possible that lack of clarity comes from pursuing elite interests above all else. Either way, there has been no meaningful support for industry

Nor is there clarity about the challenges and complexity for ensuring successful intervention by the state. It is not a simple matter of transferring state resources to private investors. We hope this paper will, at least partly, fill that gap with respect to industrial policy.

An economy prospers when consumption and production increase. At the micro level, with the right conditions, firms climb up the value chain and can sow the seeds of a dynamic economy⁴.

a select set of individuals influence economic development through the simple fact that they define the social context that determines how factor endowments are used and institutions are designed. Also, "not all goods are alike in terms of their consequences for economic performance. Specializing in some products will bring higher

² Quote in Box: DFID The Politics of Poverty: Elites, Citizens and States: Findings from ten years of DFID-funded research on Governance and Fragile States 2001–2010

³ Investopedia defines public good as a commodity or service that is made available to all members of a society. Typically, these services are administered by governments and paid for collectively through taxation. Examples of public goods include law enforcement, national defence, and the rule of law. Public goods also refer to more basic services, such as access to clean air and drinking water. These are non-rival and non-excludable goods. This paper also refers to the business environment for firms, HR quality, and infrastructure as well as R&D support and skills training by government. These goods help private productivity that we cannot expect the market to provide.

⁴ Adjacent box text from: The Role of Elites in Economic Development, edited by Alice H Amsden, Alisa D Caprio, and James A Robinson, United Nations University World Institute for Development Economics Research

growth than specializing in others"⁵. Massive investment in construction, auto assembly, or private power may not have had the desired consequences for the economy.

Government must fill the gap and create the conditions for building industry that positively affect economic performance. Even more so, it must shape the production structure to make it economically meaningful. That means Pakistan must improve and diversify the quality of its export basket. Research informs that "countries that latch on to a set of goods that are placed higher on this quality spectrum tend to perform better"⁶.

Industrialization refers to building new goods with new technology. The first shift is from agriculture to manufacturing. Sustained growth comes from "structural change with continuous technological innovations, industrial upgrading, and improvement in infrastructure and institutions"⁷. That is the essence of structural transformation. There can be no long term growth without it⁸.

For that to happen, firms must first be profitable at the present level of technology. Only then they would move up the value chain. With the present state of public goods in Pakistan, our firms cannot move up the value chain suddenly. As an aside, it is important to say that as the shift takes place, policy makers must ensure that it is not at the expense of food security. Flow of farm hands to industry would not affect agriculture production, if GoP acts to increase productivity.

the inability of government institutions to prevent conflict, provide basic security, or basic services can have life-or-death consequences (for the poor); lack of opportunity can prevent generations of poor families from lifting themselves out of poverty, DFID. By 2050, Pakistan's population may reach 450 million. Each year, over 2 million young people enter the labour force. Endless political volatility and economic chaos cannot provide them jobs or offer any hope. To avoid a disaster, GoP must change its approach to economic policy. Government's manic focus on fixing the macro

economy is important but not enough. The economy will improve only by producing and consuming more goods and services.

⁵ What You Export Matters, Ricardo Hausmann John F. Kennedy School of Government Harvard University, Jason Hwang, Department of Economics, Harvard University, Dani Rodrik, John F. Kennedy School of Government, Harvard University, October 2006

⁶ What You Export Matters

⁷ Industrial policies for avoiding the middle-income trap: a new structural economics perspective, Justin Yifu Lin, Journal of Chinese Economic and Business Studies, November 2017

⁸ IMF Survey: Economic Structural Change Vital to Successful Development, IMF Survey, June 28, 2013

This paper focuses on ways for the economy to industrialize for a lasting effect on growth. It also builds in practical ideas of inclusion. Inclusive growth should not remain an abstract idea. It must translate to action. Promoting entrepreneurship at all levels and investing in education and health offer an effective route to inclusion and avoiding economic instability.

The objective of this paper is to study how Pakistan may industrialize in order to address Pakistan's endemic economic instability. Evidence shows industrial growth is critical for a country's economic success.

The paper discusses:

- > The requirements of industrialization, i.e., what does it take to industrialize.
- > The constraints faced by the manufacturing sector and how to identify them.
- > How to stimulate manufacturing and improve quality of economic growth

Our short periods of economic growth were created by external flows that led to mostly one time consumption. Our present travails result from accepting the loans and not being able to repay them. It happened because most of the inflows were not used to generate returns and hardly went into building exports.

Is it possible to rapidly industrialize?

The question above is worth digging into. Rather than follow the usual quick and easy logic to list which industry needs what incentives to grow, it is vital to go deeper into what makes industrialization possible.

Industrialization was not one dramatic event. In Europe and Asia, it took centuries and decades, respectively. Nations industrialize with consistent efforts jointly by public and private actors. Academia and research play a key role with new discoveries, information, and ideas.

In East Asia, visionary leaders drove the change⁹. Today, especially the role of politics is key. It is not possible to divest economic policy from political capacity, without which there will not be progress. If political will or capacity do not exist, the country must wait. Because empty sound bites and half baked ideas will not build industry.

So, an important task for this paper is to propose an institutional framework to plan and implement an industrial policy. Doing so would assure that the industrial policy contributes to growth to the fullest possible and that GoP make the right kind of support to the most meaningful industries.

Before implementing it, the plan to industrialize must receive a good deal of thought, consultation and rigorous analysis. These exchange of ideas and analyses inform decision makers about the type of interventions that would best leverage industrial growth. Without

⁹ Lee Kuan Yew, Deng Xiaoping, Park Chung-hee, Mahathir Mohammad were political leaders and architects of East Asian growth.

knowing the process, it is wise to be cautious of any document that recommends this incentive and withdrawal of that regulation. Otherwise, recommendations would be either weak and sloppy or in service of special interests. Yet, it would waste a lot of resources.

Actions taken under the industrial policy have implications for the economy and for all citizens. It is therefore very important to do the best we can to get it right. Most tools of industrial policy, such as cheap credit, R&D, infrastructure investment exact a cost on GoP's finances. The taxpayers bear that cost. Citizens must have the comfort that it is for a good cause. Also, industrial policy must tie in with monetary policy in the setting of interest rates. These are complex issues with high economic and political consequences. With the help of experts, leaders must take the decisions. Lobbies develop and must be dealt with. Also, leaders must motivate implementing civil servants and monitor their performance.

A rigorous process of information gathering in cooperation with private firms, would minimize mistakes and help create more wins than losses. We cannot restate enough times that the cost of industrial policy mistakes can be very high. We have examples in Pakistan of policy mistakes leading to waste of massive amounts of the economy's resources.

Pakistan has the tendency to readily accept all foreign advice. Often it has done so without asking questions or studying its consequence. IFIs are the usual source of our counsel. And much of it are best practices from elsewhere. Even today they are based often on neo-liberal ideas, though those ideas are under assault even in the economy that gave birth to the fallacy of market fundamentalism.

Many recommendations from outside experts have harmed our economy. A radical change in the power sector has left it in ruins with grave implications for the economy. In the 1990s, WAPDA at most needed tweaking. That fine organization is a weak apparition of its excellent past. Similarly, we have become dependent on IMF programmes without generating the structural reforms that they are meant to bring. And yet they keep lending. On the other hand, our response is weak, inconsistent and incomplete.

The purpose of the above is not to find faults. It is to highlight the need for Pakistan to have a home grown plan for economic growth and industrialization that suit our conditions.

"The market for mass-produced industrial goods cannot be created by a single 'big push' under import substitution or 'shock therapy.' It can only be created step by step in the correct order". Yi Wen So, industrialization is not an idea set in motion by technocrats from their exclusive domain in academia or in Blocks A to S in Islamabad. Nor is it the remit of outside experts. Technocrats are the support. An informed and motivated political leadership must sift ideas and engage the whole delivery machinery to put them into effect. In manufacturing capitalism, increase in labour productivity is the source of profit¹⁰. That means producing more goods from the same unit of input. And as we will see later, improving labour productivity relies on the sum of an economy's productive capability. They include inputs from infrastructure to people and machines to laws and ideas¹¹. The role of human capital accumulation and productivity growth are vital¹². With continuous improvements in inputs of public goods, an economy upgrades its industry with new technology. New technology increases productivity of labour¹³. (This is also structural transformation).

The minimum requirement for that to happen are political commitment with capacity to lead. That would get the right talent to build the process for rigorous planning and implementation. Of course, this is only possible with political stability. Without it, we may see marginal progress, if at all. There will be no meaningful structural change nor any major and consistent boost in export.

In China, to take one example from East Asia where longevity of leadership was widespread, the first step towards industrialization was to "maintain political stability at all costs¹⁴." Political stability is the basis of economic progress and industrialization.

Also, industrial growth will not happen if the entire effort consists of a 'hope and prayer.' It will occur when political leaders pilot the effort with a conscious decision to make the country an industrial hub.

In East Asia and Europe, the state led the process with a mercantilist ideology and with selectively open markets¹⁵. In the case of Europe, colonies were critical. They became the source of raw material and a market for Europe's production. In the 17th to first half of the 20th centuries, China and India lacked "state-supported mercantilism ideology and state-organized and protected domestic and global trade"¹⁶.

¹⁰ Proto-industrialization, Daniel Little, Understanding Society,

https://understandingsociety.blogspot.com/2010/09/proto-industrialization.html

¹¹ Our World in Data, 'How and why should we study 'economic complexity'? by Esteban Ortiz- Ospina and Diana Beltekian March 19, 2018, https://ourworldindata.org/how-and-why-econ- complexity

¹² Hyeok Jeong, World Bank Policy Research Working Paper 8240, Korea's Growth Experience and Long-Term Growth Model, Development Research Group, Macroeconomics and Growth Team November 2017

¹³ Justin Yifu Lin, Industrial policies for avoiding the middle-income trap: a new structural economics perspective, Center for New Structural Economics, Peking University, Beijing, China

¹⁴ China's Rapid Rise: From Backward Agrarian Society to Industrial Powerhouse in Just 35 Years, Yi Wen, Lecture at the Federal Reserve Bank of St. Louis, MO.

¹⁵ Mercantilism is economic nationalism for the purpose of building a wealthy and powerful state. Its most widely understood meaning is a system that seeks to enrich the country by restraining imports and encouraging exports. This was Europe's policy from 16 to 18th centuries. Once Europe was dominant in global markets, it espoused open markets. Even so, the West regulated markets at home and opened markets in colonies, which became a source of raw materials and demand for the West's industrial goods. In addition to trade, this paper considers state's promotion of commercialization at home as mercantilism. In doing so, it transforms a traditional society to a modern economy.

¹⁶ The Making of an Economic Superpower, Unlocking China's Secret of Rapid Industrialization, Yi Wen

Thus, industrialization needs the state's guiding hand. No economy has progressed without it, regardless of what foreign advisers say. Also given its importance, industrialization must be a national goal at all levels of government from federal to local. Its implementation requires rigour and discipline. There cannot be exceptions or favoritism. It is not easy. That is why such few economies are truly industrialized. Of the 101 middle income economies in 1960, just 13

"Economic change in all periods depends ... on what people believe" Joel Mokyr had transited to high income economies by 2012¹⁷.

It brings a sea change in society. In China, "It required a fundamental ideological shift in what people believed in and in what people had perceived as "right and wrong" or "good and bad""¹⁸. It is a shift in what society values as important. In Pakistan for

example, news about industry does not get the same attention as a statement about or by India. Leadership has to promote commercialization among the people and train the civil servants to guide and lead so that they enable firms to flourish. Awakening the mercantile spirit is the first step to developing a modern economy.

A major industrialization initiative should be a home grown strategy cut out for our circumstances and the stage of economy. There are enough world examples to learn and adapt from.

Holistic planning is important also because industrialization causes a major social change. The change includes movement of people from farms to factories. It is a shift of people who mostly work independently for a subsistence living to working in teams in an organization. It involves division of labour, specialization in production, and large markets with sufficient income for mass consumption by common people.

Let us see what others did, to have an idea about how Pakistan may go about it.

The Box below recaps the stages of Chinese industrialization and the time it has taken them to do so. They are the stages in Deng Xiao Ping's industrial growth plan. Political stability is an absolute must. Without it there can be no certainty about government's commitment to growth¹⁹. We take the example of China:

¹⁷ World Bank The Middle-Income Trap: Myth or Reality? Greg Larson, Norman Loayza, Michael Woolcock

¹⁸ Yi Wen, page 49

¹⁹

China's Path to Industrialization

- 1978-1988: Development of small firms in cities, towns and the rural areas. In the ten years, the number of firms grew from 1.5 million to 19 million. By 1988, such small manufacturers had a share of 45% in GDP. Personal income grew 12 folds. With increase in income, demand for consumer and intermediate goods grew. As the products from these micro and SMEs improved in quality, exports also grew. From the foreign exchange earned, China imported modern machinery. (As per SBP, SMEs in Pakistan have a 40% share in GDP).
- 1988-1998: Mass production of labor-intensive light consumer goods. Based mostly on imported machinery, China became dominant in the global economy in textiles, toys, and furniture. This was China's first industrial revolution.
- 1998 to present: Mass production of the means of production. During the first two phases, domestic demand for consumer and intermediate goods grew rapidly. That allowed mass production of coal, steel, cement, chemical fibres, machine tools, and ships. It became one of the largest manufacturer and consumer of these goods. China also built highways, bridges and tunnels, and fast trains. In parallel, its production structure moved from labour intensive consumer goods to intermediate goods and more complex production.

China's path was no different from that followed by UK, US and Japan where rapid growth is especially impressive, as until the late 1970s, it did not even have a functioning market economy.

Also, China's reforms were grassroots, bottom-up. It started with improving agriculture productivity, to ensure food security even with fewer farmhands.

(The box above is based on a study by the Federal Reserve Bank of St. Louis MO. 'China's Rapid Rise: From Backward Agrarian Society to Industrial Powerhouse in Just 35 Years Yi Wen')

Along with food production, China also promoted industry in the rural areas despite their use of old technology. A list of these industries is in the footnote²⁰.

Village or cottage industry raised income levels that gradually created a mass market for consumption of domestic goods. "Unlike modern capitalist manufacturing, proto industrialization did not depend on rising labor productivity as a source of higher profits. Instead, merchants increased the scale of their businesses by extending production to additional households and workers"²¹.

Success at home led to exports of these goods. Exports earned the foreign exchange needed for import of machinery for upgrading the industrial base. From rural industry, it was easy to move to light manufacturing. Such as labour intensive mass production of textiles and shoes. In fact, as rural industry grew, the lines between stages were blurred.

The success of this approach was quickly evident. China saw unprecedented growth. Income grew rapidly.

"Democracy cannot function without industrialization. Industrialization is impossible without a strong state." Yi Wen, The Making of an Economic Superpower The "average growth rate of village-industrial output was 28% per year between 1978 and 2000, doubling every three years for 22

years"²². South Korea saw a similar growth in output and personal income with its New Village Movement, rated by ADB as the key step in that country's development, see Box. Rural industry and light manufacturing created a prosperous class. Both savings and consumption grew. High savings and investment, growth in demand, boost in labour supply and mushrooming of entrepreneurs resulted in a giant leap for production.

With the base in place in China, the first industrial revolution soon followed during the years 1988 to 1998. In those years, China began exporting textiles, furniture and other light manufactures and soon established itself as a major player in the global market. In 2001, it became a member of the WTO.

In the next few years, China moved to modern industry. That came on the back of "enormous government support for infrastructure build-up"²³. Gradually, the economy moved up "the

²⁰ Yi Wen, page 79 They made chopsticks, tooth-brushes, plastic plates, paper cups, plastic buckets and containers, buttons, pins, nails, textiles, yarns, silk, sweaters, skirts, shirts, shoes, hats, gloves, pottery, chinaware, furniture, curtains, sofas, kitchenware, bicycles, motorcycles, simple farming tools, fertilizer, commercialized agricultural products, school supplies, toys, black and-white TV sets, lowquality watches and more

²¹ Understanding Society, Daniel Little https://understandingsociety.blogspot.com/2010/09/proto-industrialization.html

²² Yi Wen, The Making of an Economic Superpower, Page 41

²³ Yi Wen, China's Rapid Rise

industrial ladder, from light to heavy industries, from labour- to capital-intensive production"²⁴. It was a gradualist approach in which China refused to take advice from Western economists.

Despite that, China's path was not much different from the industrialization stages that Britain, USA, Japan, and others went through. China's second industrial revolution began in 1998 and is still continuing. It is now the largest producer "of the means of mass production," producing and consuming massive amounts of steel, coal, cement, chemical fibers, and machine tools.

This period since 1998, also saw the rise of the holy trinity of industrialization. China produced huge quantities of gigawatt hours of energy. It connected the country by rail and roads. Since 1998, China has built 2.6 million miles of public roads, including more than 70,000 miles of express highways. Twenty-eight of its 30 provinces have high-speed trains, with a total length exceeding 10,000 miles, 50 percent more than the total for the rest of the world.

It is a long and spectacular path from village enterprises to China's present. All in 20 to 30 years. Government led with diligence and wisdom. Entrepreneurs responded because there was the urge to compete with the best.

The role of learning has been critical. Endemic in its societal values, firms were in a constant effort to learn and improve. Government encouraged it. As firms built new products, there were spillovers. The private sector created the synergy among them to impel further growth.

So, to the question asked at the beginning of this Section 'Is it possible to rapidly industrialize?' the answer is not yet. As the above review shows, in Pakistan's case, some ingredients are missing.

Why is industrialization important?

Because it has a well-established nexus with growth. And despite the importance of services, manufacturing stays strong as a driver of GDP growth²⁵.

According to UNIDO, government policies play 'a decisive role' in industrialization, based on 'strategic collaboration' between the state and private sector²⁶. One of the key elements of this is successful tech transformation based on "high levels of investment in human and physical capital."

UNIDO also informs that when economies with low per capita income and low natural resources embark on 'sustained industrialization,' they do so with 'low productivity growth'.

²⁴ Yi Wen, China's Rapid Rise

 ²⁵ UNIDO What Factors Drive Successful Industrialization? Evidence and Implications for Developing Countries, Page 2, 2017. The text quotes several research by eminent experts.
²⁶ UNIDO

The number of firms engaged in production though is very large²⁷. UNIDO suggests that industrialization usually begins at a modest technology and capital levels but across a large swath of firms. We cannot transit to industrialization by targeting just a few big manufacturers. The change must include the bulk of the firms.

As low income economies grow in prosperity, the production structure and its exports become "less concentrated"²⁸. That is, they diversify into more complex goods. And this happens for "most of their development path"²⁹.

The above analyses, based on evidence, shows the weakness in the 'comparative advantage' argument. That theory recommends that a country must do what they do best. Soon after the Korean war, South Korea was told to grow and export more rice³⁰. Obviously, they did not do so. Industrialization therefore comes by acquiring "mastery over a broader range of activities, instead of concentrating on what one does best"³¹. And it does so through a virtuous circle of progress from low tech to higher tech based on "an interactive process of strategic cooperation between the private and public sectors" (Rodrik). As it does so, comparative advantage becomes dynamic.

Developing economies must move from the idea of comparative advantage to focus on "diffusion of technology"³². This diffusion could be from developed to developing countries. There can also be spillovers from one sector to another within the domestic economy. Markets usually under-invest in sectors with large learning spillovers, as benefits are widespread. Government must intervene to promote innovation.

The spill overs from learning are not just in technology, but also in building institutions. It creates better financial institutions and improvements in research and education. Learning and its application to production began in the West in the 1800s and in the last century in East Asia. That has had a profound effect on living standards of the people. Use of learning, not markets was the key enabler. Thus, governments must do all they can to improve the education system and build innovation. It must have a technology policy, industrial policy and as discoveries begin, intellectual property rights³³.

The emphasis on learning finds echo in the Korean growth model. Keun Lee of Seoul National University avers that it is not simply an active state that picked and subsidized industry winners. It is "the fact that the country was able to strengthen the capability of firms, thus inducing sustained growth for several decades." He stressed that "The most fundamental

²⁷ Which is what South Korea and China did, i.e., small firms did not become profitable via labour productivity, but by hiring additional hands and adding more household members.

²⁸ Industrial Policy for the Twenty-First Century, Dani Rodrik, November 2004, John F. Kennedy School of Government, Harvard University, Faculty Research Working Paper

²⁹ Dani Rodrik November 2004

³⁰ Joseph E. Stiglitz, Industrial Policy, Learning, and Development, Chapter 2 of the book The Practice of Industrial Policy, John Page, Finn Tarp, editors, United Nations University, World Institute for Development Economics Research, 2017

³¹ Dani Rodrik, November 2004

³² Joseph Stiglitz, Industrial Policy, Learning, and Development Joseph E. Stiglitz

barrier to sustained development is local capabilities". Attributing Korea's growth to low wages and price competitiveness or to devaluation and trade liberalization would have caused growth to be short lived³⁴. Writing for the World Bank, Hyeok Jeong finds human capital accumulation and productivity growth as the key features of Korea's rapid growth³⁵.



The above graph instructs in a couple of ways. There is overall correlation between investment and GDP growth, though a moderate one of 0.32. The trendline of the two variables is downwards. Over a period of 32 years, both fixed capital formation and growth have fallen. Investment has fallen at a faster rate than GDP growth. It is perhaps because GDP grew also from one time consumption. We see the role of political stability in investment and growth. Investment fell in 1993, 1997 and post nuclear tests. It revived post 9/11 with flow of foreign aid into the country. Also, the global financial crisis cast a shadow for a few years until CPEC flows began.

This paper has said it before, that structural change means producing new goods with new methods and technology. It means moving up from traditional activities to new ones. Developing economies cannot move to high tech at once. It cannot happen.

Thus, it is not possible for the present firms in Pakistan to suddenly go high tech in large numbers. The present stock of infrastructure, access to credit, and HR talent does not allow a sudden upgrade. We must make a success of what is possible to do now with our present stock of capital, forex, technology and human talent. Once the present firms are profitable, their own appetite for growth and risk coupled with state guidance will motivate them to go up the value chain.

 ³⁴ Keun Lee, How Can Korea be a Role Model for Catch-up Development? A 'Capability-based View,' Research Paper No. 2009/34, UN University World Institute for Development Economics Research
³⁵ Hyeok Jeong, Policy Research Working Paper 8240, Korea's Growth Experience and Long-Term, Growth Model Development Research Group Macroeconomics and Growth Team, November 2017

South Korea: The New Village Movement or Saemaul Undong

The New Village Movement or Saemaul Undong (SU) was launched by President Park Chung Hee in 1971 as a community development program. An ADB report suggests that "Ultimately, this was the key program in the country's long-term economic development". President Park imbued the programme with the "Saemaul spirit" of diligence, self-help, and cooperation.

A Borgen Project write up informs that "Park provided each of the nation's 33,267 villages with 335 bags of cement, a half ton of iron rods" and a four steps plan. Its first step was to select community leaders and raise seed money. Step 2 was to hold meetings with villagers to persuade everyone to join. Step 3 was the main phase of the project, and involved launching co-ops and village enterprises, modernizing homes and establishing cultural facilities. Lastly, villages would create their own newspapers, build city halls and partner with neighboring towns.

Within 9 years, rural household income rose six times and rural poverty fell to 10.8% from 27.9 percent. Women gained prominence in the local economy.

By end 1970s, rural household incomes were at par with urban households. Village life improved with modern dwellings. Farm productivity grew and Korea soon overcame its chronic food shortage.

SU changed the mind set and restored the nation's self esteem. It "built a national confidence infused with a "can-do" spirit that transformed a former national mentality of chronic defeatism into new hope, a long-term shared vision of a better life for all, and an infectious enthusiasm sustained by volunteerism at the community level" (ADB).

President Park's determination was key to its success. He motivated South Korea's bureaucracy to become willing and effective partners in ensuring success. A critical contribution of SU was mass education of the people during the 1970s.

It improved "individual and community well-being through (i) poverty reduction ...; (ii) access to modern infrastructure and services brought about through mechanized farming, electrification, improvement in the quality of housing and health services, and child care; (iii) empowerment of local communities and amassing of social capital; (iv) revitalization of community leadership ... and creation of a status free social context within rural village setting; and (v) acceptance of modern roles for women". A Saemaul Bank financed rural enterprises through microfinance. The programme used traditional cultural values and folkways to propel socioeconomic change.

- Dennis Swayer, Borgen Project, South Korea's New Village Movement https://borgenproject.org/new-village-movement-korea/
- ADB The Saemaul Undong Movement in the Republic of Korea: Sharing Knowledge on Community-Driven Development

How can government determine the right incentives to assist the private sector to produce new products?

It is an important question because Pakistan has made enough policy mistakes already, placing a high burden on its citizens.

To answer it, we must learn what prevents entrepreneurs from producing new products and increase their profit. This Section lists some important considerations to be kept in mind in forming an Industrial Policy.

First let us decide why is production of new and more complex goods important. Because research shows "a connection between a country's export mix and its level of development and growth". In fact, an economy's product mix is a predictor of its future growth³⁶. Why is an economy stuck with producing low tech products?

According to leading thinkers³⁷, the main hurdle to going up the value chain is uncertainty of cost and benefits for the entrepreneurs from producing new products. Even if the product has been standard in other economies, there is uncertainty about its viability in our economy. "It is not about inventing products that are new to the world but about finding whether they can be competitively made in a particular place. The discovery is about the place's³⁸ capabilities, more than about the product"³⁹.

Why is there uncertainty when similar economies have produced the product before? There are two reasons or two kinds of market failures that government could help fix.

Coordination failures: i.e., other investments that need to be in place before it is possible to produce a new product. "Many projects require simultaneous, large-scale investments to be made in order to become profitable"⁴⁰.

Dani Rodrik gives the example of producing orchids in Taiwan. A few things are key for a prospective investor in a greenhouse that will grow orchids. They must know if it is on an electrical grid. They must have water and logistics that will bring input and send output. They must know if quarantine and public health measures will protect the plants, and when exported they are accepted by importing countries.

This is the idea of the 'Big Push' theory narrowed to the cluster level in one sector. Success is dependent on the ability of public and private sectors "to coordinate the investment and

³⁶ Hausmann, Hwang, Rodrik What you export matters.

³⁷ Nobel Laureate Stiglitz, Dani Rodrik also Ricardo Hausmann. Also, Justin Yifu Lin, former Chief Economist World Bank. Their views are available in several publications including some referred to in this paper.

³⁸ Pakistan in this case.

³⁹ Ricardo Haussmann, Self Discovery

https://www.ricardohausmann.com/selfdiscovery#:~:text=Self%2Ddiscovery%20(a.k.a.%20cost%20d iscovery,the%20feasibility%20of%2 0new%20products

⁴⁰ Dani Rodrik Page 12

production decisions of different entrepreneurs"⁴¹ A couple of interesting ideas flow from this:

- That general policies in support of industries can go just so far. We must also study specific requirements for making the new products.
- The subsidy is one time. Once in operation, all the investments must be on their own. No subsidy is needed ex-post. "It is the logic of coordination failures that once the simultaneous investments are made all of them end up profitable."
- Many of the surrounding investments are in technologies or services that offer benefits to other products, i.e., they have positive externalities.
- If the subsidy went to the industry and not for building the needed services or technology, just the benefit of subsidy would make the product profitable. There will be no creation of the new service. So, government may support not specific sectors, but the "type of technologies that have scale or agglomeration economies and would fail to catch on in the absence of support"⁴².
- In the orchid example above, some of the services have a high fixed cost and are typically the remit of governments. Others, such as logistics and transport would be in the private sector and may need support if that area is not initially served or if a higher technology, such as refrigeration is needed. Without orchids supply, transporters would incur a loss if they refrigerated their trucks. And the orchid grower would suffer if there was no transport. So, government support initially would make both investments possible. Yet, once made together the investments should need no more help and must be profitable on their own.
- Information externalities:
 - Investment in new products must answer a simple question. Can it be produced "at low enough cost to be profitable". The product is already in production in other places. An investor must adapt the technology to their local conditions. If the new investor fails, the cost incurred is his to bear. If they are successful, imitators will follow. While the first investor has spent money on discovery, the imitators will earn returns without incurring the same level of cost. The first investor would have shared the value of his discovery. No new product has been invented. So, the product and process cannot be patented⁴³.

⁴¹ Dani Rodrik Page 13

⁴² Dani Rodrik Page 14

⁴³ Dani Rodrik Page 11

Hausmann and Rodrik⁴⁴ recommend government help for new products. But they emphasise doing so with conditions. As the new entrant must incur risk and costs, they must receive a subsidy in the shape of cheap credit, R&D, training or trade protection. But they must ensure strict adherence to agreed performance requirements, such as exports, introduction of new technology or meeting environmental standards. Research also finds that FDI does not have the technology spillovers that it is widely believed to have. In most cases, East Asia relied on learning by domestic firms. It avers that "subsidizing foreign investors is a particularly silly policy, as it serves to transfer income from poor-country taxpayers to the pockets of shareholders in rich countries, with no compensating benefit"⁴⁵.

Before we discuss what all this means for policy in Pakistan, there are a couple of concepts to iron out. We will bring all these ideas together into how Pakistan must move forward.

The idea of Economic Complexity

Modern production is possible by bringing together many people with diverse knowhow and specializations. Combining their knowledge results in production of goods. Yet, there is a difference in the amount of knowhow a product needs.

Making T shirts needs fewer specializations than making an airplane. "Richer societies have more collective knowhow and use it to make a greater variety of more complex products. Poor countries are able to make few simple products"⁴⁶.

Economic complexity refers to the networks in an economy that bring together individuals with diverse knowledge into productive organizations. The products that an economy makes reflects the knowhow that the country has. Countries that make robots, computers or jets have more complex networks of people and organizations. Countries that produce clothes or toys, less so. In principle, "the more complex the web of human interaction is in a country, the more prosperous the country"⁴⁷.

An economy's national income closely follows the level of economic complexity, see Figure below ⁴⁸. As complexity grows on the horizontal axis, GDP per capita rises on the vertical axis. The effect is blurred by the large size of the circles, but it is there. Our goal must be to gradually nudge Pakistan's production structure towards higher degree of complexity.

⁴⁴ Hausmann, Ricardo and Dani Rodrik, "Economic Development as Self-Discovery," Journal of Development Economics, vol. 72, December 2003

⁴⁵ Dani Rodrik, Page 30 based on a study by Gordon Hanson "Should Countries Promote Foreign Direct Investment?" G-24 Discussion Paper No. 9, 2001.

⁴⁶ Ricardo Hausmann, Economic Complexity https://www.ricardohausmann.com/economic-complexity

⁴⁷ Ricardo Hausmann

⁴⁸ Copy pasted from 'Our World in Data' https://ourworldindata.org/grapher/eci-ranking-vs-gdp-per-capita?country=PER-USA-PAK-CHN-IND-IDN-TUR-MEX-JPN-MYS- SGP

Economic complexity rank vs. GDP per capita, 2016



Economic complexity corresponds to ranking in the Economic Complexity Index (ECI). The ECI ranking orders countries from the most to the least economically complex. GDP per capita is adjusted for inflation (at constant international prices) and accounts for differences in purchasing power.



Source: Data compiled from multiple sources by World Bank, ECI - Observatory of Economic Complexity (DEC) (2016) and the Atlas of Economic Complexity (2016) Our WorldInData.org/how-and-why-econ-complexity • CC BY

Another concept worth knowing before we get to recommendations is the idea of 'Product Space.'

Economies grow by upgrading the products they make and export. Yet the stock of capital, skills, knowledge, and institutions decide which products the economy can make⁴⁹. A low tech producer cannot immediately take several leaps into high tech products because it does not have the talent and the institutions to do so. There are missing capabilities. "Our research has shown that countries diversify by moving preferentially into "nearby" products as captured by the Product Space"⁵⁰.

Nearby products are those that are possible to make with similar know-how to those needed for products that are being made currently. Each country has a certain set of products it is already producing. Mapping those products gives its product space. Products that need similar inputs and capabilities to the country's product space are the 'nearby products.' Making these products is within the realm of possibility. In the words of Ricardo Hausmann, the product space is a map in which the distance between any two products is related to the distance in the capabilities required to make them. Nearby products are products not being made, but need similar knowhow to make to those that the economy has already⁵¹.

⁴⁹ The Product Space Conditions the Development of Nations, C. A. Hidalgo, B. Klinger, A.-L. Barabási, R. Hausmann

⁵⁰ Ricardo Hausmann

⁵¹ Though this paper references just Hausmann's contribution, Hausmann also credits Hidalgo, C., B. Klinger, A. Barabasi and R. Hausmann. 2007. "The Product Space Conditions the Development of Nations." Science Magazine 317(5837): 482-487.

These visualizations⁵², the product space map and the economic complexity index, will "help governments in deciding on policies that can facilitate diversification"⁵³.

The two figures below give Pakistan's complexity rank between years 2000 and 2020. The second figure compares our position to select economies. Some economies have improved their ranks rapidly. China, India, Thailand and Vietnam among them. Others have meandered.



⁵² Explore Pakistan's product space here:

https://atlas.cid.harvard.edu/explore/network?country=168&queryLevel=location&year=2020&produ ctClass=HS&product=undefined&sta rtYear=undefined&target=Product&partner=undefined and the complexity ranking here: https://atlas.cid.harvard.edu/rankings

⁵³ Ricardo Hausmann

A recap

Taking the above ideas together, we can move to how policy makers in Pakistan may use them. Also, see Annex for why we need industrialization.

What we have discussed in the foregoing paras are:

- Industrial policy needs political commitment and political capacity. It will not happen without top leadership's constant informed engagement.
- > Committed leadership will build and guide an appropriate institutional arrangement.
- It will put in place a rigorous plan for long term growth. Otherwise, we will have policies suggested by foreign experts or our own fragmentary approach. Both have caused immense harm to our economy. IPPs and incentives for the construction sector are obvious examples. As are the ill conceived youth or laptop schemes. They have taken away resources from productive manufacturing sector or from technical education.
- As in East Asia, the country must have a home grown industrialization plan, owned by the leadership. The gradualist plan must relate to the present stock of our technology, HR and capital.
- For the economy to grow, it must diversify into newer products. The more it diversifies, the faster it will grow. Government's role is decisive.
- As quoted earlier, "not all goods are alike in terms of their consequences for economic performance. Specializing in some products will bring higher growth than specializing in others."
- Rich economies make more complex products (robots, computers, jets) than developing economies (garments, linen, and toys). As complexity is a predictor of prosperity, Pakistan must try to manufacture products that are more complex than what it makes at present.
- Yet, complexity depends on the ability of an economy to build networks of individuals with diverse specializations. The networks needed for computers is vastly more complex than those needed for making T shirts. So, it is hard to move quickly to products that are too complex for the economy. Shifts have to be incremental.
- Stiglitz advises emerging economies to focus on diffusion of technology. Government plays an important role by building physical and HR capital.
- > It is possible to quantify the complexity data and rank economies on an index.
- > Each country also has a product space. These are products it makes already and exports.
- Surrounding the products, are 'nearby products.' These are products that it does not make yet, but that need similar knowhow for production to the products being made already. It is more realistic for the economy to move to those products.
- These indices and quantitative measures offers a map of possible new products. This is a guide for entrepreneurs to pioneer industries that are new to the country and yet possible to make. This information will help decide on feasibility within the country's present knowhow. It especially helps governments decide on policies that facilitate diversification.
- Why are these nearby products not being made? That is because of uncertainty of cost and benefits for the investor. While the products are standard manufactures for other

economies, they need tinkering before they are adapted to Pakistan's conditions. They need other investments to be made, simultaneously, to profitably make the new products, see orchids in Taiwan example above. Or the entrepreneur is unsure about the feasibility of manufacturing the product. If it is a success, imitators will share the profits while only the initial entrant has borne the discovery cost of making it. On the other hand, if the new products fails, the loss is his to pick.

- So, government must help with making the product. To do so, it must be done in a way that making the new product upgrades the economy's knowledge base. It is best to help with tech support through R&D, training or capital. Or government may assist with helping the simultaneous investments needed to build the product, e.g., subsidize setting up private refrigerated transport services for distribution of orchids, or supply of water and power.
- How government will help is also a process of discovery. It must consult with private investors. Yet, policy making is not an exact science. Success depends on how well the policy matches industry needs to efficiently produce the product. Government support to industry earned a bad name in the period of neo-liberal fundamentalism in some advanced economies. This was so even when all evidence was to the contrary. The same beliefs transited to Pakistan via IFIs. There would be instances when the policies will not work in the future too. That does not mean that the idea of industrial policy is wrong. It is because the policy design was not appropriate. That is why the policy making process is critical. This paper will discuss the process more fully in the section of institutional design.

Institutional Design

Planning and implementing a strategy for industrialization

- Prepare an action oriented economic growth strategy within which industrial policy would be key. Three other areas should be a 'technology policy,' a 'rural uplift programme' (taking cue from China, South Korea, Japan and European economies), and an 'education and skills programme'. The latter three policies also feed into upgrading the economy's industrial base.
- Such a comprehensive national development programme needs close engagement of top leadership. Once engaged, there would be gradual and 'learning by doing' build up of political capacity, at all levels of government, to conceptualize and enforce the programme. The trick lies in fevered and total engagement of the leadership and without compromise.
- Designate an organization to plan and implement the policy. A reconstituted Planning Commission whose head is the PM could be tasked. It would need major human resource investment. It must have leaders in several areas of industrial growth, rural growth, technology policy and education with clear goals and responsibilities.
- This must be announced as a major national development programme by the PM on the lines of many successful initiatives announced by world leaders:
 - In Malaysia, the National Economic Policy of 1971 was followed in 1981 by Mr. Mahathir's thirty year vision with successive National Development Policy, National Vision Policy and New Economic Model.

- In China, Mr. Deng Xiao Ping's three step development strategy was key which China overachieved in each phase. Its key components were the 'four modernizations' (of agriculture, scientific and technological development, and national defense). Currently, Secretary General Xi Jinping's modernization of industry, technological upgradation and self reliance have become that country's key priority in a fast changing world.
- In the last three years, USA has announced three major industrial policies in the shape of the Infrastructure Investment and Jobs Act with an investment target of \$ 1 trillion, the CHIPS and Science Act to boost American research, development and production of semiconductors, and the euphemistically named Inflation Reduction Act, 'which will invest \$391 billion in energy security and climate change' (White House).
- Similarly, Pakistan must set out a national development strategy with the broad goals of socio economic change. Making an all encompassing announcement is morale boosting for a despondent nation and will build the confidence of citizens and firms. Pakistan has been left behind on many fronts and there is lots to do. The strategy must lay down outcomes, goals, and an institutional mechanism. Most of all it will begin to boost citizen confidence.

The development plan must define a role for the state in the economy. When must the state intervene to fix market failures. When and how must the state lead to move the economy into new areas⁵⁴. It must also identify the areas from where the state must exit and let the markets work. The private sector must have clarity about where and how much government help to expect.

From here on, this paper discusses the institutional design of a robust industrial policy:

A rigorous institutional set up will improve the chances of success of the industrial policy. Contrary to common belief, industrial policy is not grant of incentives here or to amend a regulation there. That is a policy to serve special interests.

Industrial policy is essentially a process to determine the areas where policy action is most needed and would make the most difference in diversifying into producing new goods.

- The main purpose of industrial policy is to diversify the economy and create new types of comparative advantage. It follows that incentives ought to focus on economic activities that are new to the domestic economy. The policy's target would be on investments that expand the range of capabilities of the home economy⁵⁵.
- 2. It must have specific benchmarks/criteria for success and failure. Incentives under an industrial policy, like most other areas of public policy, would not always show desired results. Recipients of subsidies can game public agencies and continue to receive support

⁵⁴ Refer Marriana Mazzucato podcast. In her view, limiting government role to market failure is very limiting. If it were so, none of the key US research would have been made on which today's high tech products, such as iPhones, pharma etc. are based. "How the Consulting Industry Warped the Economy, Infantilized Government, and Weakened Business" with Mariana Mazzucato based on her book The Big Con: How the Consulting Industry Weakens Our Businesses, Infantilizes Our Governments, and Warps Our Economies Hardcover – March 7, 2023

⁵⁵ Discussion in numbers 1 through 9 and the 'Example' are almost entirely from the research paper Industrial Policy for the Twenty-First Century, Dani Rodrik under the paper's heading Elements of an Institutional Architecture.

despite poor outcomes. There must be a clear idea of what constitutes success and how to measure it. Receipt of further subsidy must be contingent on proven success.

- 3. There must be a built-in sunset clause. One way to ensure that government does not commit resources endlessly, especially to those activities that are no longer paying off is to phase out all support by default.
- 4. Government support must go to activities and not sectors. A focus on activities or process 'facilitates structuring the support as a corrective to specific market failures instead of generic support for this or that sector' (Dani Rodrik). Rather than offer investment incentives, say, for tourism or call centers, government programs may subsidize bilingual training. Similarly, government may help private sector to improve agriculture productivity or in adaptation of foreign technology to local conditions. Cross-cutting programs such as these have the advantage that they span several sectors at once and are targeted at market failures directly.
- 5. Subsidy must go to activities that have positive spillovers. That activity must have the potential to crowd in other, complementary investments or generate informational or technological spillovers.
- 6. The authority for carrying out industrial policies must be vested in organizations with demonstrated competence. Most government departments have pockets of competence. They may be given the responsibility for industrial policy activity. Orientation and training would reinforce these pockets.
- 7. The implementing agencies must be monitored closely by a principal with a clear stake in the outcomes and who has political authority at the highest level. "Close monitoring of the promotion activities by a cabinet-level politician, a "principal" who has internalized the agenda of economic restructuring and shoulders the main responsibility for it, is essential." This would guard against private capture of promotion activities.
- 8. The agencies conducting promotion must maintain channels of communication with the private sector. This is a delicate matter. It is not possible to target the right activities with right incentives without deep knowledge of the industry, which the private sector has. Thus, consultation with entrepreneurs is important. Yet, too close a relationship could lead to collusion. That is why the role of the principal (in 7 above) is important. For the government to develop the capacity to identify business needs, there should be 'coordination and deliberation councils' for consulting with experts and entrepreneurs. This way it would gain information about where and how to help. There will be several councils for each industry or activity.
- 9. Some promoted activities will not succeed. Our goal should be to try to minimize the chances that mistakes will occur. Yet, that should not make government risk averse. So, the primary goal must be to minimize the costs of the mistakes when they do occur. Performance criteria and sunsets would build in circuit breakers.

"Modern economic growth is a process of continuous technological innovation, which raises labour productivity in the existing industries, and industrial upgrading, which moves an economy from low value-added industries to higher value-added ones and thus raises labour productivity as well". Justin Yifu Lin

Below is an example or illustrative case of subsidizing an assumed case of information failure caused by cost and benefit uncertainty by moving to a new product:

Uncertainties associated with investing in an activity that is new for the economy is a good case for government to subsidize. It would remove uncertainty for an investor in a new activity and compensate for pioneering risk:

- Entrepreneurs will share pre-investment proposals with government for its support. To get the support, the proposal must meet pre-set criteria. These criteria would be a. the investment relates to substantially new activities; b. it has the potential to provide learning spillovers to others in the economy; and c. the recipient of subsidy is willing to submit to oversight and performance audits. Government support would be in the shape of R&D, skills training, or in connecting firms with markets.
- 2. In 1 above, if demand exceeds supply of government support, entrepreneurs must compete among themselves with the best proposals to avail the support.
- 3. Financing: Business development and cost discovery require longer term and riskier forms of financial intermediation. Government must revive DFIs for priority sectors that meet its economic goals, especially new activities with spillovers.
- 4. Internalizing coordination externalities: governments need to have the capacity to identify coordination failures and attempt to resolve them. The coordination and deliberation council discussed above is one mechanism. Exchange of ideas and information must take place at the national level, regional and sectoral levels.
- 5. Public R&D. Technology cannot be acquired from advanced countries in an off-the-shelf manner. Many new industries need support from publicly funded R&D to identify, adapt, and transfer technology from abroad. The trick is to ensure that these efforts are well integrated with private sector activities and are targeted to their needs.
- 6. Government must also subsidize with general technical training.

There must be a nuanced understanding about the pros and cons of state intervention. State intervention often helps but also hurts. Some points cannot be stressed enough:

It is important to view industrial policy as a stimulus for structural change rather than promotion of a specific industry and certainly not specific firms. In promoting structural change, governments must at some point make a choice of which industries to prioritize. Selecting priorities on the basis of cogent logic and via an exhaustive process would minimize the risk of failure. Industrial policy is the same as other policy making. They cannot be 100% successful. Yet, if state intervention leads to a self-sustaining process of industrial progress and a shift to efficient industries, fear of failure must not deter.

- The other fear is of state capture. Influential companies may assume a say in state decisions that diverts benefits to them at the expense of efficiency. In Pakistan, there are myriad examples of cronyism that have caused continuation of subsidy even in cases where government intervention has failed and caused harm. Also, not all privatization of PSEs have gone well. PTCL and K Electric are examples. An industrial policy with the right institutional design, as this paper has attempted to put together, would reduce flops and increase successes. It would take us closer to the major economic goal of structural transformation.
- IPPs is a case of subsidies and price distortions created by policy that has destabilized our economy. Auto sector protection costs the economy more than the industry contributes. Something similar can be said about incentives for the construction sector. And textile exporters' frequent demands for taxpayers' support are examples of the political economy going out of control. Similarly, a clear case of an incentive going too far is concessions for localization for mobile phones. It shows a complete lack of understanding of the match between an economy's capabilities and the stated goal. As reported, Rs. 46 billion have been spent as subsidy without the firms meeting their part of the bargain⁵⁶. The answer to these egregious distortions is not to stop government support for all industries, but to offer help with performance conditions and sunset. Before agreeing to such terms, GoP must internally study how to get its intervention right, so that they achieve their goals.
 - A caveat is in order. There is no magic formula that suddenly creates industrialization. The East Asian miracle which is an object lesson in rapid growth through industrialization (mostly), was the result of rigorous and disciplined planning and hard work. It is a long and arduous task, a matter of many people doing many things right, over many years, to make a country grow.
 - There are social implications of industrialization, which the industrial policy must broadly cater for:
 - For example, successful industrialization could cause a mass exodus from farms to industrial centres and cities. GoP must plan to invest in the cities or SEZs for people to live and go about their daily business. The economic growth this creates would more than pay for the investment. We must try to comprehend the demands of the Pearl River Delta Economic Zone in Guangdong or Shenzhen, China's first economic zone which is now a megalopolis. Or visit the travails of Dickensian England, which is how most people in Pakistani cities presently live without a Dickens to show us the mirror.
 - GoP must also intervene to improve agriculture productivity so that fewer farm hands can produce food in equal or greater quantity as before.
 - There will be environmental effects. It is useful to take this into account.

⁵⁶ Express Tribune, Still importing to 'Make in Pakistan', Shahbaz Rana, 18 March 2023

- Government does not make all the investment, but it must plan and institutionalize the shift of population. This is not a moral issue. Better planned movement of workers from farms and small towns raises the quality of human capital and facilitates investors.
- Industrialization is not an isolated or abstract idea. It is a process of social transformation and modernization, which requires people to adjust to a new way of life. Government must understand it to be so and make it easy for those affected.

Why have past efforts to industrialize not worked?

Pakistan has not been immune to industrial policy. We have done so in bits and pieces and without putting in place a rigorous institutional design needed for its success. The result is that it has not led to structural transformation that would show in higher exports.

This paper often cites the example of private power producers who continue to receive huge support from taxpayers and consumers. Auto production by foreign firms receives massive tariff protection. Yet, GoP has starved publicly owned firms of much needed resources.

In the 1960s and 1970s, Pakistan set up capital intensive industry in the public sector. It could not spare the resources to make them profitable with new investment to upgrade technology. More importantly, the economy could not avail the spillover effect from these investments. So, we have the steel mill, HMC, HEC, a shipyard as well as a locomotive manufacturing factory. They either lie abandoned, are grossly underused or are serving a purpose other than what they were meant to do. In FY 22, we imported iron and steel worth \$ 5.2 billion⁵⁷. Furthermore, contrary to all successful examples of industrial policy our support for IPPs and auto assemblers is unending, with no sunset. As said before, government help to private firms must always have a sunset. And within this period, performance criteria must guide continuation of support.

Private power production began in middle 1990s. IPPs have been handheld for 27 years or so. Auto assembly began in early 1990s. It has stayed an infant industry since. How much more investment they have crowded in is moot. This is a travesty of industrial policy. Such incentives create 'white elephants' rather than promote structural transformation in Pakistan⁵⁸.

Another myth we live by is that East Asian growth was export led. Thus, any control on import is bad. A few caveats are important.

First, East Asia prioritized food security through higher productivity. It reluctantly, if at all, opened food import, preferring to subsidize farming.

Similarly, it ensured at-home production of the means of mass production such as energy, steel, cement, machine tools and the like. Such capital intensive producers could profit only if there was assured demand at home. Growth of thousands of large and small firms ensured continued high demand for such goods.

⁵⁷ Commerce ministry data

⁵⁸ Ricardo Hausmann Pakistan Competitiveness and Structural Transformation

East Asian economies were selectively open for trade. They were open for inputs for export industries but not for those items in which they were trying to build competitiveness at home.

During the West's period of industrialization, it imported raw materials from colonies and sold them their manufactures. That is what open markets for low tech producers mean even today. Regardless of what foreign advisers say, low tech producers such as Pakistan must have selectively open markets and a level of import substitution. In the present changed world of rules based trade regime, the protection must be less than transparent or based on technical barriers. From the foregoing paras we surmise that GoP must intervene at two levels. It must review its overall approach to industry, yet also target specific sectors. UNIDO: "sectoral policies may foster productivity and economic growth when they target the most competitive sectors." Later, this paper moves from the general to discuss some selected sectors.

In his thoughtful book 'The New Realities: In Government and Politics, in Economics and Business, in Society and World View', management guru Peter Drucker likened state economic policy to boiling water. When placing a pot of water on a burner we can be sure that the water would boil. We don't know though how the individual bubbles of the boiling water may flow. That is the uncertainty of microeconomics at the firm level.

Industrial policy must focus on both the pot and the bubbles. Pakistan's helpful approach to private enterprise must remove the warts and glitches in our economic governance. It must also select and support specific areas (based on research) to boost exports.

The demographic window is also important. In Pakistan's case it may last another few decades. But that window helps only if GoP starts large scale investment in human resources to raise their overall and technical capacity. Pakistan has the highest population growth rates in its comparator group, yet it has the lowest rates of secondary school enrollment⁵⁹. Investment in "physical and human capital is one of the most relevant factors" in industrialization⁶⁰. Public investment "has played a key role by crowding in private investment," UNIDO. Let us get a couple of more arguments out of the way.

As we have seen in the case of China, industrialization is not only about increasing supply of goods. That is one half of the equation. It is also about growth in demand. An industrial economy has the capacity for mass production of manufactured goods. But it must have an accompanying mass market for buying those goods. Few policy papers on the subject in Pakistan have touched on demand creation.

Many factors go into creating a mass market, see Box.

Most policy makers consider that bulk of mass production must be for exports. In this paper's view, most mass produced goods must first find a domestic market. Once they are in wide use at home, they will have the quality and price for other markets.

⁵⁹ ADB Technical Assistance Consultant's Report, Pakistan: Competitiveness and Structural Transformation in Pakistan Prepared by Ricardo Hausmann, Ph.D. Center for International Development, Harvard University, Page 29

⁶⁰ UNIDO, page 97

The other idea to dismiss is one of top down support for industry. Again, the growth economies of East Asia have shown that a top down approach of selecting a list of industries for support would not work. That is a way to support special interests but not to boost industrialization.

Mass production and consumption, needs bringing in a large part of the people of the country into the production process.

So, we must view industrialization as something that happens ground up. Selecting an incentive for this industry or that is cherry picking. There is no example of success for such an approach. In fact, even the fabled MITI⁶¹ of Japan, with its enviable systems and consultation mechanisms, has failed as many times in picking winners as it has succeeded. Support must go to activities that are new and have spillovers for use by multiple industry.

Also, the bulk of people must have the means of buying the goods produced. As China's example shows, increasing purchasing power of the wide mass of people is equally important.



Mass markets and mass production means we must not focus on cities alone or just on leading manufacturers.

⁶¹ New name METI

To create mass demand, we must find ways to increase income of the vast number of people. So far, a major part of Pakistan's population still lives in the country. Smaller towns and villages. The Economic Survey 2020-21 says that "more than 65-70 percent" of the people depend on agriculture to earn a living. World Bank estimates Pakistan's rural population at 63%⁶².

These are estimates. The boundaries between urban and rural are not as clear as one is led to believe. The estimates are based on administrative divisions. Those just outside urban municipal limits count as rural but are engaged fully in a city's economy⁶³.

The important consideration is how many people have the income to be part of a mass consumption market. PIDE research estimates rural poverty to be over 32% in 2020-21⁶⁴. Overall country poverty in 2021 was 26% or 57 million people. A mass market must bring into fold this large part of the country and people with income just above the poverty line. Otherwise, there is no mass market. To raise income, they must engage in activities other than subsistence farming or what they earn as the urban underemployed. It is a question of giving opportunity to them to do so. This way they would also become buyers of goods. In essence, production depends on purchasing 'power of the masses' and a delivery network⁶⁵.

Under Deng, China focused to increase agriculture productivity to spare workers for village crafts and light industry without risking food security. Deng also required villages to rapidly develop rural economic opportunities. This was a repeat of what had happened in Britain in the 17th and 18th centuries when peasants increasingly took part in manufacturing. Korea's Saemaul Undong did the same.

In time, the part-time peasant workers became full time factory workers and the village micro firms gradually scaled up. In years to follow, these rural firms became global players emerging as the Haeirs and the Huaweis.

Industrialization is not the single thrilling moment it is made out to be. Its beginning is humble, often in the countryside, comprising many thousands or even millions of village enterprises. Without such a large number of growing firms, mass production of heavy engineering goods is not profitable.

⁶² WB data https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS?locations=PK

⁶³ Espaco e Economomia https://journals.openedition.org/espacoeconomia/22019

⁶⁴ The State of Poverty in Pakistan: PIDE Report 2021, Table 1.1 Page 15

⁶⁵ Yi Wen, page 28
"The root cause of China's poverty was not merely the lack of capital, but the lack of organization", Yi Wen

The products of these industries made possible production and export of electronics, computers, and home appliances. Once an economy has such depth in the industry, from micro to the giant, it is resilient to crises. US has faced 15

economic crises and a four year civil war and bounced back. Likewise, China came out unscathed from the 2008 crisis.

In general, some lessons for Pakistan to industrialize are as follows:

- The total government system from the federal to local governments must coordinate for the success of industrialization. In China, local governments played a critical role in the success of village enterprises and low tech industry. Elsewhere too, local authorities can be key⁶⁶.
- The strategy to industrialize must build on local conditions, "Grow existing industries and build on their foundations, skills and capabilities rather than attempting to launch high-tech industries from scratch"⁶⁷. As far as SMEs are concerned, we may initially focus on industries that are labour intensive, with easy access to raw materials, that do not need advanced technology, and has large demand. They would also not need large quantities of energy.
- Support industry by encouraging access to credit, local skills training, and by connecting them to markets.
- As SMEs grow in scale, GoP must help with access to formal credit, supply of power, foreign exchange allocation, and import of advanced technology.
- Pakistan may selectively revive state owned capital intensive industries. It may partner with foreign private firms to do so. At present scale, their capacity is modest. There is enough demand in the economy to consume their output.
- Set up an effective office for establishing technical, safety, and environmental protection standards. For this, the Pakistan Standards and Quality Control Authority must play a more visible role. They must have offices at the national, provincial and local level so that monitoring of standards of a large part of production takes place. This will greatly help boost exports and do away with Pakistan's image as a producer of low quality goods. The monitoring of standards must be especially stringent for export goods.
- Civil servants at all levels of governments must be trained to be enablers of business. Growth of firms should be the ultimate test of their performance and the basis for their promotion.

⁶⁶ Tim Mazzoral, World Economic Forum, 6 ways governments can encourage entrepreneurship, Dec 29, 2014

⁶⁷ Mazzoral

> See box summarizing the enablers of mass market. Government must begin work on the

What is important is to grow firms with strong root systems that can sustain their own growth as much as possible, World Economic Forum list in that box to enable growth in market size, i.e., credit intermediation, connection to input and output markets, and supply of information.

Political vision is key here. Top leaders must make industrialization a national priority, if not a national emergency.

There are some non-economic requirements for industry to grow. They are security at the borders and inside and political stability.

Also, we must set right the macro economy. The latter will take time. Until this happens, reliance on growth of small enterprises and the spirit of the individual is important for the economy. In the present state of many kinds of uncertainties, our best bet are the small firms and building the industries we have.

This paper relies on China to support the idea that small firm growth and increasing purchasing power among the masses will create buoyancy in the economy. This phenomenon is universal though. USA categorizes 99% of its businesses as small, holding a share of 47% in GDP and employing 50% of the workforce⁶⁸.

We cannot expect FDIs in any large numbers. Nor can we expect a sudden burst of industrialization by large domestic industries. The credit space, foreign exchange for import, technology, and business confidence do not exist at present. It is not a static situation. This

Though the nation's largest corporations get the spotlight,

...the reality is that the vast majority of businesses in the U.S. are small businesses. In fact, there are an astounding 33.2 million small businesses across America, Forbes Advisor situation will change as the economy picks up with small firms spreading and making a profit. Pakistan's economic troubles do not come from a lack of capital. They come from lack of vision and organization. We do not have the political capacity to do so. Most developing countries' inability to escape the middle-income trap reflected the failures of development ideas⁶⁹.

⁶⁸ Forbes Advisor, https://www.forbes.com/advisor/business/small-business-statistics/ Also, US Chamber, and US government's Small Business Administration give the same data.

⁶⁹ Industrial policies for avoiding the middle-income trap: a new structural economics perspective Justin Yifu Lin, Journal of Chinese Economic and Business Studies, 9 March 2017

Do we have the political ability to organize? At present, our security is threatened, political stability is a pipe dream, and the economy is on life support ⁷⁰.

The economy was now high politics, and much of politics was about the economy. Special interests as well as voters on different sides of every issue fight their battles in the political arena, IMF.

In the paras above, this paper sets а general direction for creating buoyancy in the economy and sowing the seeds for industrialization in the Industrialization country. that sprouts up and builds on what we have. It also gives indicators for how to go about doing so. Each recommendation needs much more detailed explanation and study. But it is a doable task.

And it will succeed because it bases itself on the spirit of survival and enterprise of the people. Even the smallest bit of encouragement will unleash a powerful force.

Specific actions that Pakistan must take to build industry

This paper now brings together the above ideas to build a plan for upgrading Pakistan's industry. This Section looks at the economy's record of past economic performance to analyze the opportunities for structural transformation. The goal is to accelerate future growth in order to rescue the economy from its current chaos.

This Section draws heavily on the ADB assisted Report prepared by Dr. Ricardo Hausmann of Harvard's Kennedy School, titled 'Pakistan Competitiveness and Structural Transformation'⁷¹.

It is remarkable that we have a detailed analysis of Pakistan's industry and its export potential. This Report on Pakistan's potential is not just invaluable, but perhaps unique. It does not seem as though it was put to much use. Even today, though the data is dated, it is a precious document and would be especially so if government were to have it updated and then use it. There is not even a reference to the Report in Planning Commission's Vision 2030, written a couple of years later. The triviality of this latter document lies in the fact that even the Planning Commission, with the same team in place today, no longer refers to its own vision.

⁷⁰ Box quote from IMF, The Political Economy of Economic Policy, Jeffry Frieden, professor of government, Harvard University. June 2020

⁷¹ Pakistan: Competitiveness and Structural Transformation in Pakistan Prepared by Ricardo Hausmann, Ph.D., Center for International Development, Harvard University, For the Planning Commission, October 2010

As the references to Dr. Hausmann's Report are ubiquitous, it does not help to attribute them all. Consider it a summary of the main ideas in the Report. The paper follows the logic of the above Report but simplifies some of the arguments. If that has reduced the effectiveness of the findings, the shortcoming is on this paper's part not on the original Report. That Report has been prepared with great rigour both in terms of data and the logic it pursues. The Report finds that:

- The Pakistan economy is specialized in relatively unsophisticated exports, typical of poorer countries.
- For decades, it has not progressed to export new and more complex goods and consequently has fallen behind even those economies that it bettered in the past (Thailand and Sri Lanka). In 1960, Pakistan's exports were more sophisticated than of those two economies, see figure below.
- Pakistan's dependence on textile goods and apparels is high. The capabilities needed to produce them have few alternative uses.
- Within the economy's present capabilities, Pakistan has exploited the related opportunities. So, production of new goods requires a jump in the economy's capabilities.
- Pakistan has not explored the product possibilities that its comparators has. Because Pakistan has fallen way behind others in investing in human resources and essential infrastructure.

An important priority should be to accelerate structural transformation. Pakistan's current specializations suggest that such acceleration would require a mix of facilitating movements to nearby activities, where it can, as well as encouraging more strategic jumps to new areas of the product space. Doing so would promote structural transformation.

The Report's key message is that the government of Pakistan must actively learn the sectorspecific constraints to structural transformation and overcome them in order to accelerate future economic growth. For this, GoP must put in place a robust mechanism of consultation and analysis.

This paper has already cited extensive research that confirms that the composition of a country's export basket has important implications for economic growth.

Further, Hausmann, Hwang and Rodrik (2006) find that countries that have managed to develop a sophisticated export package relative to their income level grow faster. Two prominent economies with such a characteristic are China and India. And their finding has come true in the years since the paper was written. Countries specializing in relatively unsophisticated export baskets suffer lagging economic performance, as is the case with Pakistan.

The Report shows that although Pakistan's GDP per capita is at a comparable level to India and Indonesia⁷², it has a much less sophisticated export package. This difference is even more apparent when compared to other countries China, the Philippines, and Thailand.

The Report's finding has come true since. Not only does Pakistan have the lowest level of export sophistication of this comparator group today, but its relative position has worsened over the past 40 years. The figure below is from the Report.



Figure 3 Historical Movement of EXPY (logs)

Why has Pakistan not been able to move to new and more sophisticated export products? What are its opportunities to do so in the future?

- Pakistan has not invested in physical and human capital: In the Heckscher-Ohlin tradition⁷³, this is caused by changing relative factor intensities caused by factor accumulation. As a country accumulates more physical and human capital it naturally moves towards goods that are more intensive in physical and human capital. An economy changes its comparative advantage with human and physical capital accumulation.
- Each product has specific inputs needs: To begin exporting new products, it is easier to move to nearby products in the 'product space'. This is so because every product involves specific inputs such as knowledge, physical assets, intermediate inputs, labour training, infrastructure, property rights, regulatory requirements or other public goods. They are specific in the sense that those required for one product are particular to it, and somewhat different than those required for another product.

⁷² At the time of writing of the Report by Dr. Hausmann

⁷³ According to Wikipedia "The Heckscher–Ohlin model is a general equilibrium mathematical model of international trade, developed by Eli Heckscher and Bertil Ohlin at the Stockholm School of Economics. It builds on David Ricardo's theory of comparative advantage by predicting patterns of commerce and production based on the factor endowments of a trading region". It is widely used in developing international trade models.

- New industries find it hard to source the required inputs: Established industries have ironed out the challenges of making these inputs available. It makes it easy for subsequent entrants to follow in the same industry. Firms venturing into new products will find it much harder to secure the requisite inputs. For example, they will not find workers with experience to make the product in question or suppliers who regularly furnish that industry. Specific infrastructure needs such as cold storage transport may be non-existent, regulatory services such as product approval and phytosanitary permits may be underprovided, research and development capabilities related to that industry may not be there, and so on.
- Even the capabilities available in an economy must be tweaked for a new product: New entrants therefore must tweak and adapt the inputs that exist in the economy but are specific to other products. Research finds evidence that capabilities needed to produce one good are imperfect substitutes to produce another good.
 - For example, the particular set of infrastructure, institutions, and human capital specific to the garment industry are also relatively easily adapted to the wiring harness industry (Klinger 2007), but more difficult to adapt to the call center industry.

This widely spread product space, see figures below, has important implications for structural transformation. If a country is producing goods in a part of the product space that is densely linked (in terms of capabilities) with other goods, diversification is easier because present set of capabilities can be easily used for other nearby products. If a country is specialized in peripheral products (peripheral in the product space), then the shift is challenging as there are few products requiring similar capabilities. So, structural transformation is halting.



Source: Hidalgo et al. (2007) and author's calculations using Feenstra et al. (2003).

The figure above is a map of the product space. The dots are products. The lines are connections by capabilities. The black squares are goods that Pakistan exports. Pakistan's exports are in the lower centre part of the product space. Yet, the dense part of the product space is in the middle. These latter are complex goods, mostly machinery and equipment.



The Hausmann Report compares Pakistan's position in the product space with Indonesia and Thailand. Thailand and Indonesia not only dominate garments (lower centre) and electronics (upper right) but have also made inroads into the industrial core.

Findings:

- First, Pakistan's black squares are mostly at the bottom of the space. These are textile and apparels. It has few black squares in other parts and none in the dense centre. So, it is difficult for it to leap into production of complex goods.
- Second, between 1975 and 2000⁷⁴, Pakistan consolidated its presence in this tightly packed garment cluster. But as noted earlier, while this cluster is tightly connected within itself (i.e., once you make pants, it is easy to make shorts and skirts) it is very weakly connected to the rest of the space (making pants does not enable it to make spark plugs or hard drives). Pakistan has almost fully occupied the tight cluster and seems to be left with few nearby options for structural transformation around these sectors. In other words, it has exploited all of the related opportunities in this cluster, and is now left without a path to other areas of the product space. Consistent with this observation, the Report informs that between 1975 and 2000 Pakistan did not make any substantial jumps and occupy new areas of the product space.

So from its present structure of production, to move to new products in the product space requires Pakistan to have capabilities completely unlike those that presently exist in the economy.

Strategy

These two findings have important implications for policy, indicating what type of strategy is most appropriate for accelerating export growth in the country. There are two possible strategies.

- One dimension of potential growth is within existing products. The suitability of this dimension depends on whether or not the current basket is sophisticated enough compared to GDP per capita to sustain growth. It is not. And in any case, it stands exhausted.
- The other dimension is to achieve structural transformation by moving from existing products to new products to the central part of product space. That needs capabilities that Pakistan does not have.

Pick the low hanging fruits plus some more.

In earlier sections, this paper cautions the government against picking winners. Soon, we will see that the Report also lists new products for Pakistan to possibly to move. It is not the same as picking winners and subsidizing them in the hope that they become competitive. The products and policies recommended by the Report are based on "the empirical structure of the product space".

Another important suggestion by the Report is that inputs that the public sector must provide, such as infrastructure, institutions, and education, are not as 'horizontal' as suggested in most

⁷⁴ The Report gives the product space with Pakistan's position from the years 1975 to 2000.

models and are instead quite sector specific. That is, while government must provide the above public goods investors must adapt them to the needs of their production. Or GoP may make them as specific as possible, i.e. train workers to produce mass scale furniture or to cut stone.

So, the Report's main recommendation is to learn sector-specific barriers and provide the necessary sector-specific public inputs to allow firms to move to new activities.

The Report lists new export activities Pakistan is not currently exporting although there could very well be significant production for the domestic market.

	Exports	Market		Strategic
Product	(USM)	(USB)	PRODY	Value
Other oilseed processing	6	30	3384	5717
Frozen food manufacturing	13	19	3985	6682
Coated and uncoated paper bag manufacturing	5	12	8560	8022
Forest nurseries, forest products, and timber tracts	12	18	2431	4717
Breweries	12	17	5736	7787
Tree nut farming	2	3	4321	5848
Cut stone and stone product manufacturing	0	10	5208	0680
Greenhouse and nursery production	2	14	2784	5468
Animal production, except cattle and poultry and eggs	6	17	7672	6335
Roasted nuts and peanut butter manufacturing	3		4746	6431
Blankbook and looseleaf binder manufacturing	2	4	7497	9360
Coffee and tea manufacturing	11	24	3947	8210
Other animal food manufacturing		7	4182	8203
Bread and bakery product, except frozen, inanufacturing	7	18	0824	8335
Mattress manufacturing	1	3	5893	8944
Soap and other detergent manufacturing	2	20	5795	10180
Primary aluminum production		45	10092	0074
Cigarette manufacturing	0	14	11020	8420
Jewelry and silverware manufacturing	66	174	7081	7008
Ferroalloy and related product manufacturing	D	19	1918	5604
Dry, condensed, and evaporated dairy products	56	48	10094	8103
Wood container and pallet manufacturing	1	3	8487	9382
Veneer and plywood manufacturing	0	9	4049	7759
Duaduate with DCACOS and douging	hours the	noti m	manutile	. Can

Pakistan's Low Hanging Fruit: Un-exported Products with High Density

Products with RCA<0.5 and density above the 90th percentile for all un-exported sectors, excluding minerals and oil. In order of decreasing density.

These are products that Pakistan is producing at home but not exporting. The first column with numbers gives Pakistan's \$ export amount. This number is in millions. The next column gives the world market for that product, i.e., the product's potential for export. This data is in billions. PRODY is the estimated level of sophistication of the product. Strategic Value is important. It reveals how many other new opportunities (or new products) are created if this new activity is successful. So, a high strategic value is of high consequence.

As Pakistan already manufactures most of the products in this list of low hanging fruits, it is possible for it to build competitiveness in them for export, by improving or adapting the capabilities needed to produce them.

- > The list is useful to guide the government in its search for what particular inputs are missing for new export activities to emerge in Pakistan.
- Determining the right inputs needs interaction with the private sector. This has to be at a disaggregated level. The list gives industry and export promotion officials in government an idea about the conversation to be had with actual firms. Interactions with them would reveal the particular missing inputs and constraints to investment.

And therefore, moving to these new activities would happen comparatively easily, particularly if the government is able to organize itself to learn the sector-specific public goods that the current or potential producers in this sector are clamouring for.

But that is not all. The Report says that even if Pakistan were able to achieve comparative advantage in the sectors listed in the Table, exports would only increase by approximately 2%. This estimate is quite conservative, but even an increase of several times more is relatively small.

The economy must reach for new areas of the product space. But activities that are in new areas of the product space have requirements that are more dissimilar to those activities that currently exist in the economy. They are likely to be more difficult as they may need additional sector-specific inputs.

Although more difficult, moving to new parts of the product space can be very valuable. Once an economy starts a new activity or product, further new opportunities and products become feasible, provided it is selected with thought. That is, activities in new parts of the product space create capabilities that can be applied to other nearby activities.

	Exports	World		Stratonic
Product	(USM)	(USB)	PRODY	Value
Miscellaneous fabricated metal product manufacturing	17	49	12421	17266
Fabricated structural metal manufacturing	12	26	9969	11935
Plastics plumbing futures and all other plastics products	78	100	10074	11883
Prefabricated metal buildings and components	0	11	10366	11850
Electric power and specialty transformer manufacturing	1	15	9251	11422
Household refrigerator and home freezer manufacturing	3	14	6290	11100
Iron and steel mills	42	208	10420	10886
Institutional furniture manufacturing	9	45	7772	10828
Other communication and energy wire manufacturing	1	39	7284	10557
Prefabricated wood building manufacturing	0	6	9776	10499
Frozen cakes and other pastries manufacturing	2	9	9370	10415
Office furniture, except wood, manufacturing	1	3	6687	10367
Other snack food manufacturing	2	11	9436	10355
Paperboard container manufacturing	2	13	6550	10350
Plastics bottle manufacturing	э	5	7857	10004
Mayonnaise, dressing, and sauce manufacturing	0	5	8933	9958
All other food manufacturing	34	39	10418	9900
Cheese manufacturing	0	20	14139	9869
Flavoring syrup and concentrate manufacturing	10	23	10033	9796
Confectionery manufacturing from cacao beans	1	18	4738	9525
Un-exported sectors with density above 7. value.	5 th percent	tile, top	20 by st	rategic

Table 2 Moving up the Efficient Frontier

This is a list of products at the next level of distance from our present capabilities. Yet, investing in them for exports, with added capabilities, brings even higher opportunities of moving further to even more complex products.



All products with RCA<.5 in 2006 other than mining and oil products. X-axis is -1^elog(density), and y-axis is the change in open forest if that product were added to the export basket.

The products are mapped based on the above Table. These are sectors that represent the best tradeoff between the difficulty of moving to more distant products, and the benefits of doing so in terms of generating new capabilities with many alternative uses.

The Report also attempts to solve a key dilemma faced by Pakistan. We have a large and growing population of the young, but they mostly do not have the skills to enable Pakistan to move to production of more complex production.

At the time of drafting the Report, Pakistan had the highest population growth rates in its comparator group, along with the lowest rates of secondary school enrollment, (see the two figures below). With high and rising unemployment and a demographic structure that will bring larger numbers of young and unskilled workers into the workforce over the coming years, a clear policy priority is to encourage economic activity that can absorb this unskilled labor and avoid social unrest caused by massive unemployment. Given the fixed stock of arable land and high population pressure in rural areas, these activities would have to be in nonagricultural sectors.

This suggests that beyond strategic value, sophistication, and distance, a clear dimension of importance for Pakistan is intensity in labor, particularly in unskilled labour.

Population growth vs. GDP per capita, 2006



Compared to other economies, Pakistan's population growth rate is much higher. Our population growth has corrected since, but the relative position with the other economies is the same.



Figure 16 Secondary School Enrollment vs. GDP per capita, 2006

Pakistan's secondary school enrolment is way lower than comparators shown in red. Pakistan is at bottom left. Again, the secondary enrolment rate has improved since to over 40%, but the relative position is the same. Today, Vietnam is at 60%, Bangladesh at 75% and the others higher to 100% for Thailand.

The Table below gives the 25 sectors most intensive in unskilled labor.

	2006	World				
	Exports	Market		Strategic		Unskilled
Product	(USM)	(USB)	PRODY	Value	Density	Labor
Cigarette manufacturing	0	14	11020	8420	0.15	0.852
Other tobacco product manufacturing	1	3	6239	8214	0.12	0.852
Logging	0	9	6455	9456	0.12	0.835
Cattle ranching and farming	0	7	4314	8798	0.13	0.601
Poultry and egg production	1	3	4907	8885	0.14	0.801
Forest nurseries, forest products, and timber tracts	12	18	2431	4717	0.17	0.797
Lime manufacturing	0	1	4278	9089	D.13	0.797
Clay refractory and other structural clay products	1	6	8626	11846	0.11	0.793
Gypsum product manufacturing	0	2	3494	10374	0.13	0.793
Other concrete product manufacturing	0	4	9338	11429	0.13	0.793
Ceramic wall and floor tile manufacturing	0	13	8322	8042	0.15	0.793
Cut stone and stone product manufacturing	9	10	5208	6680	0.17	0.793
Asphalt shingle and coating materials manufacturing	0	2	11374	11024	0.11	D.793
Nonclay refractory manufacturing	2	8	7211	11366	0.09	D.793
Oilseed farming	12	22	2153	5617	0.13	0.754
Grain farming	7	40	5252	7345	0.15	D.754
Sugarcane and sugar beet farming		1	9424		0.09	0.754
Tree nut farming	2	3	4321	5848	0.17	0.754
Wood windows and door manufacturing	0	5	7810	9504	0.13	0.724
Wood container and pallet manufacturing	1	3	6487	9382	0.15	D.724
Reconstituted wood product manufacturing	3	9	13780	11110	0.13	0.724
Engineered wood member and truss manufacturing	1	6	8440	10596	0.10	0.724
Veneer and plywood manufacturing	0	9	4049	7759	D.15	0.724
Greenhouse and nursery production	2	14	2784	5468	0.17	0.709
Animal production, except cattle and poultry and eggs	8	17	7672	6335	0.17	0.707

The 25 sectors most intensive in unskilled labor

Although relatively unsophisticated, many of these products are very near to Pakistan's current location in the product space. These nearby products include nursery & forestry products and animal products. Overall, labor-intensive products are relatively nearby for Pakistan, which is good news for the country.

This shows that other dimensions in addition to strategic value and sophistication may be important for Pakistan and can be incorporated into the analysis of new sectors. With a rapidly growing and relatively unskilled population, this list offers an opportunity to policy makers to engage with the private sector to encourage investment in the production and export of goods that can be produced by unskilled labour. It would add a great deal of value to the economy, especially in the shape of jobs for our youth. Even in this list, some items have a high strategic value.

The Report goes on to list other products even further removed from our present capabilities. This paper does not refer to them as the strategy proposed here to identify how government may support private sector is new for the government. It is a learning process for the government with many possible hits and misses. It is best to stay with the low hanging fruits, the next level of products with higher strategic value and labour intensive industries that can absorb a large number of unskilled young people.

As Hausmann's Report favours data on exports, it does not include industries for import substitution. Part 2 of this paper identifies some import substitution industries for support. These are key input industries that not only reduce the import bill, but their reliable supply would a boost to other industries.

Recommendations

- The Pakistani government needs a mechanism to enhance its dialogue with the private sector in order to learn the sector-specific inputs that are missing. The government would argue that this is already occurring. But this public-private dialogue has to identify barriers at a much higher level of specificity than is currently the case. It should be at sector and firm level.
- While useful, meetings between the prime minister and the heads of chamber of commerce and trade associations who represents all sectors will not get this job done: at this high level of aggregation, the particular needs of each individual sector will be lost.
- Only the lowest-common denominator across industries or those concerns of the largest existing industries will rise to the surface. For example, while an overall tax reduction may be mentioned, the telecom upgrading needed by the call center industry and the IP regulatory reform needed by the pharmaceutical industry will be lost in such high level dialogue. In order to identify sector-specific constraints, the dialogue must occur at a more disaggregated level, and therefore must have the necessary bandwidth to deal with that complexity (Hausmann 2008).
- Organizing such a private-public dialogue at lower levels of aggregation is difficult but much needed. There are hundreds of thousands of different businesses in Pakistan and limited government time and attention, and it is not obvious what the right way of organizing the issues may be.
- This dialogue process should have the ability to bring in new sectors of the economy as new opportunities for structural transformation emerge. Thus, rigorous selection of industries is even more important. When making its calculations, GoP may add more dimensions, such as import dependence, energy and logistics needs and so forth to select industries for dialogue.
- A rigorous algorithm for selection would ward off pressure of lobbies for selection of this industry over that.
- > An important policy proposal for general and wide use is revival of DFIs.
- In addition, DFIs usually have an open window that encourages investors to come with business plans for activities they have selected. This is a major source of information to identify what public inputs are missing so that the industry becomes viable. Financial support is granted in part to encourage the private sector to develop such plans.
- Also, it would help identify interested parties willing to invest their own funds, as well as to conduct feasibility studies. Another way to facilitate the search for new activities is to build a new industrial zone with its own management team.
- GoP should source a technical assistance from ADB or such in order to help Pakistan implement the strategy described above. These include (i) support for institutionalizing the dialogue process, (ii) creation of the institutions designed to search the longer strategic jumps through a venture fund, (iii) a set of industrial zones, and (iv) technical assistance.

There are some other detailed level recommendations in the Report under discussion and other research papers for GoP to usefully follow.

But first the government must become serious.

This paper will now recommend Pakistan specific measures including for individual industries.

Dealing with permanent crisis: Industrialization, export, import substitution and a case for a robust industrial policy

Part 2

Contents

Goals of Part 2	52
GoP's perceived economic goals	53
Recap main ideas of Part 1	54
Present situation of industry in Pakistan	56
Diminishing share of manufacturing	56
Low economic complexit	62
Missed Opportunity: SMEs	64
Missed opportunity: Agglomeration	65
Other constraints	65
Critical role of economic fundamentals	66
Recommendations	69
Specific industry analysis and recommendations	73

Goals of Part 2

- > Apply learning from Part 1 to stimulate industry to address Pakistan's enduring economic instability.
- Review situation of Pakistan industry and general and some industry specific issues that constrain its growth
- Analyze what needs to be done and decide on GoP's approach:
 - Within its present macro constraints
 - Medium term measures
- Decide on specific measures
 - General measures for all industries
 - Specific measures for individual industry

We start by listing GoP's perceived economic goals and how industrialization supports them:

Industrialization								
Goals	Industry							
Revive GDP growth to reduce frequent economic crisis by producing and exporting more and accelerating structural	All manufacturing, especially of progressively complex goods							
Increase jobs, absorb from over 2M young people entering workforce	All manufacturing							
Reduce the permanent current account deficit								
Export growth	Boost apparel exports in new goods, meat export, processed food, pharma, surgical, electric							
Export growth ⁷⁵	New areas: frozen food, cut stone, bread and bakery							
Export growth ⁷⁶	Fabricated metal goods and fabricated structural metal, plastic plumbing, electric transformers,							
Import substitution	Chemical, Steel, Pharma, Footwear, medical devices, light engineering, locos, ship building and repairs, domestic							
Revive basic industries to support industrialization	Steel, Chemical, upgrade Machine Tools factory, as they							
Food Security	Food productivity research, Food processing creates demand for domestic food production, gives							
Boost services	 Industry creates demand for services: 1. Software 2. Back Office Processing 3. Architecture and Engineering services 4. Finance, accounting and consulting 							
Boost taxes and documentation	Manufacturing is easier to document							
Gender equity	Financial, software, consulting, training, and apparel							

a. Keep an eye on the environment and climate change, but not too much. Growth is vital.b. This paper finds that incentives must go to activities and products after a process of discovery through consultation. That process must validate selection of products for offering incentives

⁷⁵ New products researched by Hausmann Report

⁷⁶ New products researched by Hausmann but needing additional capabilities

In the foregoing pages, we inquired into models of economic growth researched and affirmed by the world's leading experts. They find that:

- Economic development must be led by the top political leadership. It needs their fevered and total engagement.
- > Industrialization is a key driver of development.
- Sustained growth comes from structural transformation, which is to produce new goods with new technologies and from movement of farm workers to better paying industry jobs.
- We cannot expect industrial transformation with the present stock of capital, human resources, physical assets, technology and governance in Pakistan. The economy must invest to upgrade these public goods.
- Our economy specializes in relatively unsophisticated exports. Pakistan's dependence on textile goods and apparels is high. The capabilities needed to produce them have few alternative uses.
- Within the economy's present capabilities, Pakistan has exploited most available opportunities. So, production of new goods requires a jump in the economy's capabilities through better capabilities.
- For decades, Pakistan has not progressed to export new and more complex goods and consequently has fallen behind comparable economies. This is because Pakistan has been lax in investing in human resources, essential infrastructure, R&D, training and better governance.
- Economic complexity is closely linked to level of economic development. While other Asian economies have improved their complexity score, Pakistan's score has not improved. We are unable to produce complex goods.

To address this Part 1 recommends:

- Pakistan must have a national development strategy with the broad goals of socioeconomic change. Its key components should be: 1. an industrial policy, 2. technology policy, 3. education and training, and 4. SME growth.
- Manufacturing has a direct nexus with growth. Sustained growth occurs by investing in new capabilities to make new and more complex goods.
- The main purpose of industrial policy is to diversify into new products and create new types of comparative advantage. Incentives ought to focus on economic activities that are new to the domestic economy. The policy should target investments that expand the range of capabilities of the home economy.
- Realistically, it must first try to increase exports of those products not being exported, though they require capabilities similar to those that exist in the economy, low hanging fruits⁷⁷. We may then target industries at the next level of distance. They need additional capabilities. Succeeding in them is more difficult but also more rewarding. Moving to new parts of the product space can be productive. Once an economy starts a new activity, other

⁷⁷ Part 1 gives a list in a Report prepared by eminent expert Dr. Ricardo Hausmann

opportunities become feasible. Refer the second list in Part 1, also compiled Dr. Hausmann.

- Incentives be given to firms that meet specific benchmarks and criteria for success and failure. To avoid gaming the system, there must be a clear idea of what constitutes success and how to measure it. Receipt of further subsidy must be contingent on proven success.
- There must be a built-in sunset clause for all support. One way to ensure that government does not commit resources endlessly, especially to those activities that are no longer paying off is to phase out all support by default after say 5 to 7 years. Past policy mistakes that did not include performance criteria and sunset have cost the taxpayers dearly (IPPs, auto assembly and more).
- Government's help may take the shape of, infrastructure, tech support through R&D, training, accessing foreign experts and licenses, or preferential access to capital. Or government may assist with helping simultaneous investments required to build the product, e.g., give one time subsidy to private refrigerated transport services for distribution of orchids (an example discussed in the main paper).
- > How government will help is also a process of discovery. It must consult with private investors and decide what works.
- So, process is key to determining which activities or industries to help and by what means. This is important to avoid repeating past mistakes that have cost the economy trillions, in granting endless guarantees, subsidy and import protection.
- Industrial policy must also assist:
 - Industries that rely on unskilled labour to include the large reserve of unskilled young people.
 - Import substitution industries that not only reduce the import bill, but offer reliable supply of inputs to boost production of other industries.
 - SMEs to increase production of cottage industries. They fit are present circumstances with low need for capital, low or unskilled labour, low technology and energy. They employ those below or just above the poverty line and increase purchasing power of low income groups as a consumer of finished goods and intermediate goods. This path gave a huge boost to the Chinese and South Korean economies.

Economic development is fundamentally about structural change: it involves producing new goods with new technologies and transferring resources from traditional activities to these new ones. Dani Rodrik

	Present situation of Pakistan's industry
>	Share of manufactured goods in export is falling in favour of primary goods, Tables 1 and 2
	Share of industries of more value added (back filled in gray) have either fallen or stayed about the same, Table 3.
>	Average annual growth rate of manufacturing was 7.6% between 2001-2010. The rate fell to 3.1% during 2011-2020.
	Our industrial structure has not changed. We see no new major industry added in decades. The profile of industry is as it was, Table 3. No gain in economic complexity. Fall in WEF competitive index.
>	In the last 20 years from FY 2001, the share of manufacturing in industry has moved within a narrow band of 12 to 14.5% of GDP. In FY 22, it was 12.8% of GDP.
>	Jobs in manufacturing have declined. Reverse structural transformation. Urban centres do not have the means to boost industry. This also poses a serious social challenge if urban centers do not provide adequate jobs.
>	Uneven or declining average annual rate of savings, investment, public investment, and exports as % of GDP. Public investment has taken the biggest hit depriving private sector of much needed public goods, Table 4
	Gross fixed capital formation in the manufacturing sector is especially low, Table 5
	Weak macro indicators lead to poor economic performance, insufficient public services in support of industry, and low investment, Tables 7 and 8

a. Diminishing share of manufacturing in GDP and reverse structural transformation:

"despite the promising start in the 1960s, industry has not been the engine of economic growth and high productivity employment expected in the Government of Pakistan's (GoP's) development visions" WB Revitalizing Industrial Growth in Pakistan, Page 18 Tables 1 and 2 below, make a startling revelation. Not only Pakistan's economy specializes unsophisticated exports. In a regressive trend, share of primary goods in Pakistan's exports between the years 2002 and 2022, at the expense of manufactured goods. Rice is the main primary good being exported.

Table 1: Change in sectoral share in total exports between FY 02 and FY 22, %					
Sector	Share FY 02	in Export FY 22			
Primary goods	8.9	17.3			
Textile & Apparel	63	59			
Petroleum + Products	2	1.3			
Other manufactures	21	13.8			

Table 2: Change in sectoral share in exports between FY 02 and FY						
	Share of sect	or in exports				
	2002	2022				
Primary Goods	8.9	17.3				
Rice	4.9	8.8				
Fish	1.4	1.4				
Fruits	1	1.3				
Meat		1.2				
Textiles & App	63	59				
Cotton fabrics	12.4	3.8				
Syn fabrics	4.5	1.3				
Home linen	10	10.4				
Towels	3	3.5				
Garments	9.6	11.8				
Knitwear	9.3	14.4				
Other made-up of textile	3.9	2.6				
Petroleum +	2	1.3				
Other manufactures	21	13.8				
Leather manufactures	4.2	2.1				
Leather tanned	2.6	0.6				
Sports goods	3.3	1.6				
Carpets	2.7	0.3				
Surgical	1.6	1.5				
Engineering goods	0.6	1				
Cement		0.7				
Footwear	1.3	0.4				
Pharma & Chem	3.8	4.7				

Source: State Bank of Pakistan Balance of Payments, Exports by Selected Commodities, relevant years

Resultantly, we see a fall in share of more processed industries. There is no change in the industrial structure. We make the same goods as we did 50 years ago.

Table 3: Product Shares in the Manufacturing Sector of Pakistan, 1970-2016 ⁷⁸ , average annual share %									
Product	1970s	1980s	1990s	2006	2016				
Food and Beverage	30.45	30.94	22.89	17.1	25.4				
Textiles	27.78	18.14	25.06	31.9	27.9				
Apparel, leather, and textiles	2.04	2.37	2.8	1.0	1.2				
Indsustrial Chemicals	11.2	14.29	15.5	8.6	7.7				
Petroleum and Coal	5.27	6.01	3.26	9.7	6.6				
Rubber and Plastic	1.8	1.8	1.4	1.3	2.0				
Metals and non-metals	9.1	14.2	13.2	9.6	10.3				
Non-elect machinery	1.84	2.14	2.09	1.5	0.9				
Elect machinery	3.31	3.26	5.43	0.7	2.3				
Transport equip	2.99	2.89	3.05	5.4	4.0				

Source: WB Revitalizing Industrial Growth in Pakistan, Pg 31, PBS Census of Manufacturing Index, 2006 and 2016

Manufacturing has been stagnant. Investment has followed policies that favour other sectors such as electricity generation and construction. Jobs are similarly distributed. In 2016, agriculture employed 37.5% of the labour force, construction 10% and the rest 37%. Reflecting the state of industry, manufacturing employment in 2016 fell to 15%, down from 20% in 2009. Ideally, in a dynamic economy workers move from low productivity agriculture to high productivity manufacturing, which creates the surplus that improve living standards.

A stark contrast emerges in manufacturing growth rates between 2001-2010 and 2011-2020. In the first decade, manufacturing grew at an average annual rate of 7.6%. In the latter decade, manufacturing grew at 3.1% per annum⁷⁹.

Such a sharp fall indicates that Pakistan's industry has stayed stuck in slow growth and low value added goods. Textiles is a non dynamic industry, with little scope for tech improvement. Textile and apparel have a 61% share in Pakistan's total export. Its share in world

⁷⁸ The format of this Table is adapted from WB Revitalizing Industrial Growth in Pakistan, Pg 31.

⁷⁹ Data from Pakistan Bureau of Statistics, National Accounts

merchandise trade has been falling.

The steep fall in growth in manufacturing sector shows inadequate public goods in the economy to help firms move up the value chain. It also shows flawed policy choices which favour non manufacturing investment. With a premium on consumption, savings and investment have been uneven and in decline. Manufacturing investment has especially fallen. See Figure below⁸⁰:



Source: Pakistan Economic Survey, relevant years

The fall in share of manufacturing and exports is an outcome of the decline in savings, investment and public investment⁸¹:

Table 4: Average annual rate of savings, investment, public investment, and exports as % of GDP								
As % GDP	1970-79	1980-1989	1990-1999	2000-2009	2010-2020			
Savings	11.2	14.8	13.8	15.9	13.2			
Investment	17.1	18.7	18.3	17.9	15.4			
Public Investment	10.3	9.2	7.5	4.6	3.5			
Export		9.8	13.0	12.3	8.8			

⁸⁰ IPR, What to do about Pakistan's Mountain of Debt, Page 13, Figure 3

⁸¹ IPR research based on data in the Economic Survey of Pakistan 2021-22



Stagnant Manufacturing as % of GDP 2001-2021

While total investment to GDP at 15% is low, investment in the manufacturing sector in Pakistan is especially low, between 1.5 and 2% of GDP. FDI doesn't help either as it is virtually non-existent and hardly any is for export. The stresses on the economy have caused low savings and investment. And of the amount invested, much of it goes to sectors that receive generous incentives and protection. These sectors construction, IPPs, autos are not in the manufacturing or export sectors. So, the industrial policy must change the incentives that guide private investment decisions. Because of low investment in manufacturing, the ratio of exports/GDP has been in consistent decline for three decades.

Gross fixed	d capital format and	Table tion in the mai general gover	5: nufacturing so rnment sector	ector in privat s	e, public,
FY 10	FY 13	FY 15	FY 18	FY 20	FY 22
1.8	1.6	1.3	2.2	2	1.7

Source: Pakistan Economic Survey, relevant years

While share of manufacturing in GDP has been stagnant, exports as % of GDP have fallen. This is a direct result of fall in share of manufacturing investment⁸². The latter is caused by incentives to non-manufacturing sectors and crowding out by government borrowings.

⁸² Graph from WB Revitalizing Industrial Growth in Pakistan



Pakistan has not moved up the technology ladder: During recent decades, other economies have moved on, knowing that gains to the economy from knowledge products is way higher than from low tech products. In growth economies, there is a systemic move up the value chain, see figure below. By 2009, all economies other than Vietnam, in the Figure below, have moved from primary and resource based goods to mid and high technology⁸³. And since then, Vietnam has gone well up the value chain. In 2021, its top five exports at HS 6 level were transmission apparatus for radiotelephony, parts of telephone apparatus, monolithic integrated circuits, parts and accessories of automatic data processing machines, and parts suitable for flat panel display modules⁸⁴.



Source: Economic Diversification and Growth in Developing Countries: Toolkit (webtool), World Bank, Washington, DC, http://info.worldbank. .org/etools/prmed.

⁸⁴ World Bank Integrated Trade Solution, database

⁸³ WB Directions in Development, Private Sector Development, Light Manufacturing in Vietnam Creating Jobs and Prosperity in a Middle-Income Economy Hinh T. Dinh, withcontributions by Deepak Mishra, Le Duy Binh, Duc Minh Pham, and Pham Thi Thu Hang

- 1. Unlike Pakistan, none of the economies above have gone back towards a higher share of primary export. This is not because we have prioritized agriculture over manufacturing. It is because we have disincentivized manufacturing.
- 2. World Bank on Pakistan, "In general, the industrial sector has failed to move into capital goods that are more sophisticated and to develop upstream ancillary manufacturing, such as chemicals and engineering"⁸⁵.
- 3. We may be able to attract FDI in some critical areas. That depends on how soon we reach at least minimal macro stability.
- 4. Also, we must use technology and international platforms to intensify reforms in education, training, and skills. For a country of its size, our education achievements are an embarrassment.

b. Low economic complexity for industrial diversification:

Part 1 of this paper dwells in some detail about the idea of economic complexity and its importance to the economy. Let us look at it in the context of the Pakistan economy. The index reflects the sum of our productive capabilities. According to the idea's creators, "productive capabilities are all the inputs, technologies and ideas that, in combination, determine the frontiers of what an economy can produce"⁸⁶. Productive capabilities "include all sorts of things: infrastructure, land, laws, machines, people, books, and collective knowledge."

The Index is a measure of the economy's productive structure and the many kinds of knowledge embedded therein. These various specializations combine in a network to produce a product. Given its encompassing nature, improving the rank on the Index is a consistent effort. It must be incremental. Though we must keep doing what we can.

Labour productivity, is another key, though linked, indicator of an economy's capability. That too has seen a major fall in Pakistan. In the 1980s, labour productivity grew at 4.2% per annum. By 1990s, the growth was down to 1.8%. It fell further during 2000-2015 to 1.3% and down to a mere 1% since 2007. On the other hand, in India during 2000-10, it went up by 5% annually. This index measures growth in output per worker. Three inputs improve labour productivity: 1. increase in physical capital (machines and hard inputs), 2. increase in human capital quality, and 3. total factor productivity. The last is a measure of efficiency in use of resources and the contribution of technology to GDP growth⁸⁷. It is caused by making and managing the right investment. According to Nobel laureate Paul Krugman "A country's ability to improve its standards of living over time depends entirely on its ability to raise output per worker"⁸⁸. This paper has

⁸⁵ WB, Revitalizing Industrial Growth in Pakistan, Page 31-32

⁸⁶ Our World in Data, 'How and why should we study 'economic complexity'? by Esteban Ortiz- Ospina and Diana Beltekian March 19, 2018, https://ourworldindata.org/how-and-why-econ- complexity

⁸⁷ Rashid Amjad, Pakistan's Economy under IMF tutelage 1988-2022, Pages 145-146, for data and ideas in this para, See also Pakistan @ 100, Human Capital Figure 3, page 13

⁸⁸ World Bank Blogs, Productivity for prosperity: 'In the long run, it is almost everything', Christopher Colford, NOVEMBER 15, 2016, https://blogs.worldbank.org/psd/productivity-prosperity-long-run-it-almost-

everything#:~:text=A%20country's%20ability%20to%20improve,raise%20its%20output%20per%20 worker.%E2%80%9D&text=Paul%20

Krugman's%20conclusion%20about%20the,is%20widely%20shared%20among%20economists.

repeatedly called for such investments.

- When we look at our standing in the World Economic Forum's Competitiveness Index, we find that Pakistan is moderately competitive in market size (rank 29), business dynamism (rank 52) and entrepreneurial culture (rank 59). It has a very low rank in key determinants of growth that include: Institutions (107), Infrastructure (105), ICT adoption (131), and Macroeconomic stability (118). And in each of these key indicators, Pakistan's rank was worse in 2019 than in 2010.
- Also, in 2010, the Index listed the following as the most problematic areas for business: government instability and fear of coups, policy instability, corruption, inflation, access to financing, inefficient government bureaucracy, inadequate supply of infrastructure, crime and theft, inadequately educated workforce, among some more.

Table 6: Pakistan's rank in the World Economic Competitiveness Index							
	Overall Rank	Institution	Infra- Structure	ICT	Macro Stability	Health	Skills
2010, Out of 133	101	104	89	104	114	113	118
2019, Out of 141	110	107	105	131	116	115	125

WEF Competitiveness Index, relevant years



In the above Chart, Pakistan ranks lower than many peer countries in WEF's Global Competitiveness Index and is the only one to have a lower rank in 2016 compared to the starting point in 2007.

c. Missed opportunity: Important role of SMEs in industrialization:

- Pakistan Economic Survey 2020-21 states that in Pakistan, "approximately 3.25 million SMEs account for nearly 90 percent of all the businesses operating in Pakistan"⁸⁹. They contribute 40% to GDP and 25% to exports. Unsurprisingly, 97% of them are in the informal sector. They have no access to formal credit or government services. SMEs are important in job creation.
- Because of which, "Few of these micro and small enterprises ever reach medium size. The problem with this pattern of growth is that these micro and small enterprises (which create a large chunk of jobs) are engaged in low-productivity production activities and have no access to modern technology and knowledge"⁹⁰. They can't be the support for efficient functioning of medium and large firms that we see in East Asia⁹¹.

SMEs suffer from a lack of knowledge. They do not know government processes. Nor do they know business processes, such as accounting, accessing credits, or procurement. Thus, they operate outside the mainstream, as they have weak ability to deal with the paper work. Rather than easing their inclusion into the economy's mainstream, the government classifies them as undocumented.

Hence, they cannot access credit, technology, are unable to make formal transactions, or apply for government services, such as that exist. Yet, they are under constant assault of safety and labour inspectors and tax collectors. A more ill-advised arrangement is hard to imagine.

Importantly, SMEs also raise income level of the poorer segments in the economy. In doing so, they increase purchasing power and demand for other consumer and intermediate goods. In the recommendations section, this paper suggests a plan for SMEs growth.

Another feature of Pakistan's industry profile is a lack of integration of large firms with smaller firms through backward or forward links. This is because of high dependence on imports. In many sectors, such as fans, pharma, or autos domestic value addition is low. These firms mostly obtain raw materials and intermediate goods from abroad. This causes persistently high annual trade deficits. In FY 22, imports were 2.5 X of exports. It means limited technology absorption. Information and managerial experiences are not shared up and down the value chain. It is not surprising that structural transformation has not taken place in Pakistan⁹².

⁸⁹ Pakistan Today, March 23, 2022, Green SMEs: A turning point for Pakistan's economy

⁹⁰ World Bank, Directions in Development, Light Manufacturing in Vietnam Creating Jobs and Prosperity in a Middle-Income Economy, Hinh T. Dinh with contributions by Deepak Mishra, Le Duy Binh, Duc Minh Pham, and Pham Thi Thu Hang, page 22

⁹¹ World Bank, Directions in Development, Light Manufacturing in Vietnam Creating Jobs and Prosperity in a Middle-Income Economy, Hinh T. Dinh with contributions by Deepak Mishra, Le Duy Binh, Duc Minh Pham, and Pham Thi Thu Hang, page 22

⁹² Structural transformation is when an economy moves from low productivity and labour-intensive activities to higher productivity and skill intensive activities

d. Another missed opportunity: Agglomeration:

 \succ Growing labour force and urbanization brings the opportunity of 'agglomeration'⁹³.

The demographic dynamics will pose a serious social challenge if urban centers do not provide adequate employment opportunities. WB Revitalizing Industry in Pakistan, Page 53 Normally, agglomeration has great manufacturing potential as people and firms find different ways to connect and exchange knowhow and information. But Pakistan has underinvested in human capital and in city infrastructure. Urban clusters have to be governed well and provided social and infrastructure services. Because of this, cities have not had the stimulating effect on performance of industry. Nor has industry provided the high productivity jobs in the cities that come with growth⁹⁴.

To realize the benefits from agglomeration, GoP must have the policy formulation and implementation capacity to engage effectively with the private sector to identify crucial policy reforms. Pakistan has not invested in its governance systems.

e. Other constraints of industry:

- We must identify potential energy sources both domestic and regional that can be used to supply consistent and affordable power to the industrial sector. This has to be a major effort.
- Must change incentives for private sector so that more investment goes to manufacturing for exports.
- Improve quality of public goods. It is hardly a good sign for an economy or the society that in the last 20 years, share of primary goods, which uses no technology at all, has grown, see Table 4 for very sharp fall in public investment.
- End the coddling of textile and apparel exporters. It has a negative incentive for them to move up the value chain. They have stayed with the same product mix and compete on price in the global market at the expense of Pakistani taxpayers (or with reduced profit).
- Adding to the above complexity is that despite the instability, Pakistan's economy in terms of its trade and financial regimes has stayed largely open. This makes the job of economic policy coordination more complex.

⁹³ Ed Glaeser, National Bureau of Economic Research, Agglomeration economies are the benefits that come when firms and people locate near one another together in cities and industrial clusters. The economic benefits occur from transport savings and exchange of goods, people ideas, information and knowledge. They occur also from good supply networks, trained workers and infrastructure built specifically for the industry (Economic Help)

⁹⁴ WB, Revitalizing Industrial Growth in Pakistan, Page 26

f. Critical role of macro economic fundamentals in industrial growth:

When planning for economic revival, one thought is paramount. There can be no economic revival without first fixing the macro-economic vulnerabilities and reducing debt. Weak macro indicators lead to poor economic performance, insufficient public services in support of industry and low investment, Table 7⁹⁵.

Table 7:

Weak macro indicators cause poor outcomes and low investment in public goods

	Macro-stability						Outcomes				Enablers		
	Average of FY 2009-2019, unless otherwise stated												
Country	Ext debt/GNI % 2020	Gov debt/GDP	Current A/c/GDP	Budget Balance / GDP	Debt Ser/GDP	СРІ	10 years GDP %	Mfr Value added /GDP	Invt/GDF	P Exp/GDP	Skills WEF Rank 2019	Infra WEF Rank 2019	Institutions WEF Rank 2019
Pakistan	40	73	-2.25	-6.4	2.1	8.1	3.9	13	15.7	11.2	67	105	107
India	19.8	49.7	-2.2	-4.9	2.2	7.1	6.7	15.5	34.5	21.5	64	70	59
Bangladesh	11.8	30.6	0.6	-3.5	0.99	6.7	6.6	17.8	29	16.5	117	114	109
Vietnam	38.4	41.75	0.75	-1.1	3.2	6.1	6.4	14.4	28.7	87	103	77	89
China	14.5	42.4	2.1	-2.7	1.2	2.3	7.8	30	45	22.8	37	36	58

Source: World Bank Databank, Statista, Trading Economics, and CEIC, Census and Economic Information Center, MoF, SBP, WEF Note: Best indicator blue, most vulnerable indicator highlighted in yellow

Indicators in Table 7 are average for the period 2009-2019, so they reflect mid term trends, not one-off occurrence. The Table has three sections in different shades of colour. The six gray filled columns on the left are macro stability indicators, the four blue columns in the centre show economic outcomes, the three green columns on the right are enablers of growth. Indicators highlighted in yellow shows the worst performing country for that indicator. Blue are the best.

- > Of the six selected macro indictors, Pakistan is the bottom economy in five.
- Of the four selected economic outcome indicators, Pakistan is the worst performing economy in all.
- In the three growth enablers columns to the right, Pakistan does well in skills but is weak in institutions and infrastructure.
- > Among the three categories, Pakistan is not the best performer in any indicator.
- Simply put: We cannot have growth in GDP, exports, investment, and manufacturing surplus without sound economic fundamentals. Why?

⁹⁵ IPR research

- Because with high budget deficit there is not enough money or liquidity left for public or private investment. An economy cannot grow without public goods and private credit.
- Because our economy wastes too much money on paying interest and too much foreign exchange goes to service debt. The resultant high current account deficit deters import of machinery and essential inputs. In fact, data suggests we have de-industrialized in the last decade.
- Bangladesh has good macro indicators. So, it has high GDP growth and investment and decent manufacturing value added and exports, even though it scores the lowest in the three key enablers. That is the importance of macro stability.
- Economic stability also gives business confidence to domestic and foreign investors to have long-term interest in an economy. No amount of incentives can compensate for the lack of business confidence.

Table 8: Percent share in Federal and Provincial governments combined expenditure %											
	FY 10	FY 13	FY 18	FY 20	FY 21	FY 22					
Total Fed and Prov	100	100	100	100	100	100					
Interest payment	21	21	20	27	27	24					
Security	17	16	19	18	17	16					
Subsidies	8	4	4	7	8	11.5					
Social services	11	13	17	12	17						
Social protection	3	2	3	3	2.5						
PSDP	17	16	19	11	11	12					
Others	38	44	36	33	28						
Private sector productivity % of total*	31	31	39	26	30.5						

Table 8 below, shows how little GoP spends on building infrastructure or investing in people:

Source: MoF PRSP Expenditure and Fiscal Operations. Note: For want of timely data, FY 22 expenditure is of federal

government as a share of total fed and prov exp. Subsidies for all years is federal government only. *See Footnote 96 below for what constitutes private sector productivity spending Only about one third of all funds spent by federal and provincial governments combined helps private sector productivity, see last row in Table above⁹⁶. The rest goes to payment of interest, defence, and administration. With just one-third of total government spending on activities to boost the economy, we cannot expect sustained growth.

In essence, economic managers have not managed either the external or fiscal account, nor have they acted to promote private enterprise. Their one response is that, when challenged, they rush for outside help. The aid comes with conditions, which relegates industry to low priority.

So, this is where industrialization in Pakistan stands today. As against what we here from businesses and experts, it is not just an issue of GoP offering incentives to firms. What holds industry back are:

- > A very unstable macro environment
- Not enough public goods in terms of hard physical inputs, HR quality and governance environment to build a dynamic economy.
- > Government borrowing has been crowding out the private sector.
- Not enough fiscal space with GoP to offer incentives to new industries to diversify exports. A lot of incentives have the wrong focus. These incentives do not encourage capital accumulation⁹⁷, though they add to shareholder profits.
- Macro instability causes under investment in physical and HR inputs. But itself results from low growth because of paucity of infrastructure and HR.
- No major shift to industrialization will happen if we do not correct the political economy and the above economic model.

The issues above combine to create a very weak environment for industrial growth. Industry suffers both from low priority and from an economic governance model that causes frequent macro instability requiring constant adjustment by firms. Macro and political instability have shattered business confidence. So, even private initiatives are reluctant. FDI is especially shy. Firms cannot rely on the public goods they need to further investment in new areas.

This prevents firms from scaling up. They stay in an unending loop of low investment, low technology, and low competitiveness.

In summary, industrialization is not a list of things to do or for GoP to increase this incentive here and lower taxes there. It is a process needing long term investment in infrastructure, people, and institutions, including improvement in political choice.

For all the above, the country must have the will to improve and imagine a self respecting society. We must also exit our mindset of dependence.

⁹⁶ This paper includes government expenditure on PSDP and public services as those that stimulate economic activity, see blue backfilled rows in Table below. Public services include expenditure on health, education, sanitation, poverty alleviation, population planning, disaster management, law and order, and social protection.

⁹⁷ Capital accumulation builds the stock of capital to produce more goods and services. It includes plant and equipment, infrastructure, and human capital. It results from firms reinvesting profits.

In times of crises, strong nations rise to the challenge and find a way out. Pakistan too must act decisively and shed conventional thinking. There are no perfect solutions, only optimal ones. We cannot depend on others, but find strength in the hard work, creativity, and sacrifice of our people. There will be dissenters. Ignore the cynics and offer decisive leadership.

Recommendations: What should Pakistan do?

Of course, we cannot wait for all initial conditions to fall in place before beginning to support industry. GoP must move forward to the extent it can with incentives and facilities. While this is the desirable course to follow, its effect would be incremental. While it takes these incremental steps, GoP must also focus on the long term interventions discussed above. Incremental measures would help the economy do a little better within the same structure of industry and should set the base for structural transformation.

For now, Pakistan's industrialization goal should be to:

- Boost low tech manufacturing: consult Hausmann 'Low Hanging Fruit' list in Part 1⁹⁸. Also, hold a dialogue with the private sector to select other industries. Upon selecting a list of industries, GoP must have a dedicated team for consultation with industry and firms to decide on specific measures.
- Move up the value chain to new more complex activities and products, see Hausmann list 'Moving up the efficient frontier' in Part 1. Again, consult with private firms.
- Industries that rely on unskilled labour, see Hausmann list "The 25 sectors most intensive in unskilled labour" to combat the demographic challenge.
- Focus on light engineering products. This overlaps with Hausmann's 'Low Hanging Fruits.' They can be an important source of growth and productive employment in Pakistan given its comparative advantage in labor-intensive sectors⁹⁹.
- > The manufacturing sector must try to bring in FDI to increase exports and technology.
- Reduce preferential tax and regulation difference between export industry and other sectors (construction, IPPs, auto assembly). Presently, exports face disincentives. "The manufacturing sector also bears a disproportionate burden of taxation, diverting investment to the more lightly taxed (or non-taxed), agriculture, service, and construction sectors.¹⁰⁰"

⁹⁸ Pakistan: Competitiveness and Structural Transformation in Pakistan Prepared by Ricardo Hausmann, Ph.D., Center for International Development, Harvard University, For the Planning Commission, October 2010

⁹⁹ Definition of light engineering varies around the world. A UK source says, "Light engineering typically refers to manufacturing that turns prefabricated goods into saleable products." It includes Toys and games, furniture and fittings, home appliances, footwear. Another source says, "Light industry are industries that usually are less capital-intensive than heavy industry and are more consumer-oriented." It names similar industries. The Bangladesh Investment Development Authority considers "various industrial machinery and spare-parts, electrical equipment and parts, casting and molding products, agriculture, printing & packaging and construction equipment and a number of spare-parts for almost all categories of machinery and equipment" as part of light engineering. It is not easy to find a definition in any Pakistan document though we take light engineering in the BD terms. This paper refers to light engineering in the former sense.

¹⁰⁰ WB Revitalizing Industry in Pakistan, Page 3

Protect home industry from informal and untaxed entry of imports (e.g. Afghan Transit Trade). Afghan transit must be regulated. Either there should be agreed limits on volumes of import according to market demand in Afghanistan or Pakistan Customs may collect Afghan rate duty at point of entry and transmit to Afghanistan when goods have crossed the border.

The above measures offer a practical path for industrial growth, given the constraints faced by the economy and the stock of public goods available.

The cost of GoP intervention must be budgeted. GoP would know their effect on its finances. And the investor must have the comfort that it will be available for the period promised. Therefore, they must be well thought through. For the purpose of these recommendations, we propose that GoP set aside 0.25 to 0.3% of GDP for incentives and new expenditure. At current levels, this amounts to between Rs. 170 and 200 billion annually.

This amount is not enough to materially change or upgrade the quality of infrastructure or HR capacity in the short term. Nor would it allow serious intervention to build basic industry. It is a good amount though for most other kinds of support. It means also that we exercise discipline and prioritize what needs to be done. The proposed amount comes on top of the PSDP and the incentives and auxiliary support currently in place.

The amount will be spent on:

- Incentives including loss in GoP revenue from preferential duties and lower taxes for selected sectors.
- > Expenditure on:
 - Training
 - Incrementally improving infrastructure service and quality of economic services
 - Tech support, such as availing foreign experts, licenses, and R&D, and
 - Helping industry meet international compliance.

This level of support is a cost that the economy can bear even now, especially considering the potential returns.

Also, we need re-orientation of the PSDP, so that public investment is targeted to boosting industrialization and exports.

If the above measures bear fruit, the economy will earn enough foreign exchange and taxes to start upgrading its industrial base. Industrialization is a process of building on success, benefiting from spillovers, and firms learning from each other. This will sustain future industrial growth and modernize the economy.

Once the economy improves, GoP may focus on the following:

Given their importance for industrial growth, set up SEZs by sourcing foreign technical assistance. In addition to China, Singapore, UAE and Poland have had good success with SEZs¹⁰¹. Caveats are in order here. In 2018, there were 5,400 zones in 147 markets, with vastly varied levels of success and failures. The risk of failure is high if GoP adopts the

¹⁰¹ FDI Intelligence: Rankings & Awards Global Free Zones of the Year 2022 – Regional winners

same casual approach it shows with most major initiatives. Also, our comparative advantage to attract investment is limited. A brief note on SEZs is attached at the end of this paper.

- Reviving basic industries, some of which are dormant or in the initial stages: steel, chemicals, petrochemicals, pharma. This needs considerable funding and foreign partnerships. It will meet the goals of import substitution and stimulating other industries.
- > Improve reliability and cost of utility and logistics, especially for selected industries.
- > The best free zones are named from around the world.
- There is a need to upgrade skills and design institutes for specific industries such as leather products, footwear, surgical goods, sports goods, cutlery, furniture, jewelry, among others.
- > Build centres of excellence and dedicated research centres for the steel,
- > petrochemicals, energy exploration and production sectors.
- Pakistan Standards and Quality Control Authority must have internationally compatible standards for all goods produced here, especially for export of quality products. This would gradually do away with Pakistan's association as the origin of sub-standard quality products. PSQCA must be authorized to check the quality of export goods and to penalize infringements. They must have decentralized offices in most parts of the country.
- > Encourage setting up of packing houses, cold storage and warehouses, and
- provision of refrigerated transportation for export of fruits and vegetables. Designate zones for this purpose and facilitate land, credit, and infrastructure support.
- > Access to credit
- > Launch targeted TERF 2 or like facility for priority export industries.
- LT finance for SMEs, without which industrialization cannot grow with means for them to avail credit.
- Export credit and credit guarantees.
- Urgently revive DFIs.

For import substitution

- > Import quality seeds to improve cotton production.
- > Ensure cascading tariff structure.
- > Tariff preference for machinery imports by selected industries.
- Encourage FDI in mining (though with caution, as experience of Tethyan in copper mining has not set a good example)
- For years, Pakistani industry has been hobbled by high cost and unreliable supply of energy. Pakistan must explore all domestic sources of energy to bring down cost and improve reliability of supply.

Promote domestic energy supply: Explore all forms of energy supply: coal, nuclear, hydro, and shale. Disregard IFI expert advice.

- > Lobby with regional and global nations to build Iran Pakistan energy pipeline.
- > All incentives and facilities must be time bound and subject to performance indicators.

Strategic decisions:

- > Develop freight links with Central Asia through Afghanistan or if needed via Iran.
- While geography and history bestows Pakistan the potential to serve as a regional hub, politics has separated economies in the region. Pakistan cannot benefit from the large pool of talent, entrepreneurial class, and savings in India. Pakistan must act as the link between China, Iran and India, a role it has played through history¹⁰². That will attract businesses from the world over to the country.
- There is an urgent need to increase capacity and change culture of federal and provincial civil servants to serve industry and economic development as effective policy makers, facilitators and coordinators. It calls for dedicated investment to train and sensitize civil servants.
- One way for industry to grow and also absorb the growing labour force is to have a dedicated focus on SMEs as one of the major drivers of growth in Pakistan.

We must have a plan to:

- > Register SMEs giving them the comfort that they will not be taxed
- The registration should be backed by law, which would recognize them as legal entities to enable them
 - To apply for government services
 - Credit from the formal sector
 - Resist extortion by state functionaries

Unwittingly, government has forced SMEs to stay in the informal sector. Though GoP and SBP have made noticeable efforts to extend credit to them, much of it doesn't get used.

Also help SMEs with:

- Contract enforcement: a national market is possible if small firms have the certainty that they will receive payments for service and goods delivered
- Means of transportation and delivery for firms to receive supply of input and to reach their customers.
- > Efficient communication and accurate information

¹⁰² World Bank, Revitalizing Industrial Growth in Pakistan Trade, Infrastructure, and Environmental Performance Ernesto Sánchez-Triana, Dan Biller, Ijaz Nabi, Leonard Ortolano, Ghazal Dezfuli, Javaid Afzal, and Santiago Enriquez, 2014
General approach:

- 1. GoP interventions should focus on activities, sectors and subsectors that demonstrate the most potential for exports and job growth.
- 2. They should be cost effective in the short and long runs.
- 3. GoP must invest in building its capacity to implement the interventions and preventing it from snowballing into permanent rent.
- 4. Policies must target activities industries and sectors and not individual business groups with influence.
- 5. Incentives must be based on fulfilling preset performance criteria without compromise and having a definite sunset.
- 6. Support to firms with taxpayers' public funds must carry some conditions.
 - a. That they will not come back to the government for support after the sunset
 - b. That they will achieve success such as improve products to compete globally and maximize public value.
 - c. In some cases, the amounts of public funds must be converted to GoP equity.
- 7. There are areas in which the government needs to be involved but is currently absent. There are also areas in which the government is currently active but should not be. The SOEs are an example of the latter. As China's case shows, the government's role in establishing plug-and-play industrial parks and input and output markets, providing cheap land to prioritized industry, and guiding the growth of organic clusters into industrial zones is crucial.

Investment in manufacturing can grow only according to the economy's capacity. As pointed out before, high budget deficit limits the credit available after government borrowing. High current account deficit means that economy has low capacity to import. Lack of infrastructure services and scarce talent also constrain investment. Also, the country's institutional capacity is a constraint.

In making our recommendations for industrialization, we try not to make the same mistake as most other plans do by treating what needs to be done in isolation of our economic situation. The gap between what needs to be done and what is doable is a product of the factors given in the paras above.

From the general, this paper now studies industry specific issues and recommendations:

Exports

1. Electric fans for exports¹⁰³

In 2020, international trade in fans was \$ 6 B, growing at about 10% annually. China has a market share of about 80%. Top importers are US, Japan, Germany. Pakistan's 25 Million \$ exports go to Iraq, BD, Oman. Pakistan fans' quality is at par with China and India. There is

¹⁰³ Most information and ideas based on PBC's Report. It is true for most sector specific recommendations

potential for exports growth in other Middle Eastern, Asian, and African countries. PBC estimates a \$ 1 Billion potential in Europe, though compliance is stringent there.

Issues:

- High dependence on imports: producers use around 50-60% imported input such as Printed Circuit Boards from China, electric steel sheets, plastic, and more. Few near term solution here.
- Absence of skilled labor: To keep up with new technology, the industry must now use machineries such as injection molding, die casting, CNC lathes, automatic presses, and stamping. To operate them, the industry needs trained people in increasing numbers.
- > No R&D support: So, in-house R&D is needed, afforded by just a few large producers.
- > Some of Pakistan's low end markets pose exchange rate and liquidity risks

Recommendations:

Three areas of support are key to build exports: lower cost, standards, and certifications especially for sophisticated markets, access to talent and technology.

- Training of workers: We find sporadic and one off efforts (such as one day workshops) or general courses (as by TEVTA on electronic tech). Government must work directly with PEFMA¹⁰⁴ to support training that is directly relevant: on 'lathe machine handling, winding, die development, and fitting processes'¹⁰⁵. PSDF has done needs assessment¹⁰⁶. Trainers' capacity too is limited. So, try Udemy type platforms or any other with translation in Urdu/Punjabi (the industry is in Gujranwala and Gujrat). Whatever training is done, it must have international certification to attract FDI. Brain drain is a possibility, but that is the cost.
- Special arrangements for allocating import quotas of electric sheets based on capacity and performance (such as energy efficiency, safe material, global market compliance). If imported by TCP and PEFMA, imports may get quantity discount and firms won't be competing against each other.
- Reduce customs duty & levies on imports (China and India offer their producers duty drawback and production-linked incentive schemes)
- TERF 2.0 for upgrading technology of fan sector or EXIM Bank like credit, as well as insurance for export to vulnerable markets. Simplify collateral needs as most producers are SMEs.
- Hiring of sector specialists in key markets to "work under the commercial attaché at Pakistani embassies in these markets"¹⁰⁷ and mediate between markets and PEFMA. Cost to be shared between GoP/EDF and PEFMA.

¹⁰⁴ Pakistan Electric Fan Manufacturers Association

¹⁰⁵ PBC Report

¹⁰⁶ Punjab Skills Development Fund: https://www.psdf.org.pk/wp-content/uploads/2018/11/FAN-Final.pdf

¹⁰⁷ PBC report

- Upgrade PCSIR capacity to certify manufacturers for Low Voltage Directives (LVD), Electromagnetic Compatibility (EMC), and Restriction of Hazardous Substances (RoHS). Also, help with getting international certification.
- Support in accessing new technologies including Internet of Things for on/off switches and much more.
- 2. Footwear Industry¹⁰⁸:

The global trade in footwear is about \$ 150 B annually, growing at about 5% per annum. China has a share of 67%. Cost increase in China is hurting further growth in its share. Also, India, Vietnam, Cambodia, Bangladesh have better incentives and poised to grow their share. US imports 20% of all footwear, but Asian import is rising.

Of the exports, 48% is rubber and plastics, 38% leather. According to PBC, share of textile footwear is fast increasing, though it does not define the category. HS Code 6404 applies to the category. It says "Footwear with outer soles of rubber, plastics, leather or composition leather and uppers of textile materials"¹⁰⁹.

Statista states that "Textile & Other Footwear comprises models that are either not made of leather and/or cannot be assigned to athletic footwear or sneakers."

Pakistan's 2019 export was \$ 136 M, mostly leather footwear to Europe. Vietnam and BD are now attracting FDI. Cambodia is the fourth largest exporter with about a world market share of 9% and catching up with Vietnam.

Pakistan is not a small producer, about 2% of world production. And it consumes about 2%. FDI is virtually absent.

Issues:

- Low worker productivity and skills gap: Trained workforce in short supply. Lack of vocational and technical training institutes.
- Lack of quality inputs / components / accessories. High dependence on imports of accessories, components, chemicals, and adhesives.
- Low Level of technology & R&D
- Non-availability of quality leather: Tanning industry prefers to export quality leather, especially for shoe uppers. GoP might offer incentives for selling to Pakistan footwear producers.
- High tariffs on critical inputs: High custom duties on imports of accessories, components, chemicals, and adhesives.
- Scale limitations: Small size of production units and fragmented nature of manufacturing and lack of inter-firm coordination hampers scale and innovation. Much production in informal sector.

¹⁰⁸ Most data and ideas based on PBC report and from world trade data sources

¹⁰⁹ USITC HS Code

- High cost of doing business: Cost of power, gas, labor, transportation are high compared to regional competitors.
- Limited access to capital

Recommendations:

- Sector specific training programs in consultation with industry. Training in shoe designing, pattern making, cutting, stitching, also in managerial skills.
- Improve availability of quality leather. Extend training through the leather value chain. Government and Pakistan Tanners Association (PTA) to work together.
- Cascading tariffs: Currently the tariff on finished footwear and components are the same as for inputs. Government may change to a cascading tariff structure.
- > Timely payment of rebates and refunds to exporters to improve cashflow.
- Brand or image building: To mitigate the country's poor image, Pakistan Standards and Quality Authority must ensure that exports meet international quality. Footwear association must also play a role in this regard.
- > Doing the above may attract FDI, which is what the sector needs.

3. Surgical Instruments

Of the three US FDA classifications for surgical instruments, Pakistan produces Class 1 devices: tongue depressors, bandages, gloves, bedpans, and simple surgical devices. It produces a limited number of Class 2 items such as catheters. It does not produce any Class 3 items which are for inside the body items.

This is mostly an OEM industry, producing on orders and specs of buyers in Germany, UK, USA who print their labels on our products. Pakistan's industry concentrates on the low-end in a few markets. It hardly sells under its own name. Its world market share has been at 0.7% for many years. The industry has stayed in that place because that is where its main players prefer to be. There is very little process or product innovation, so for decades the industry's output is static.

This is despite intense competition within the cluster. With no movement up the value chain, a firm's competitive advantage is price. The industry's main competitors are from within Sialkot.

Recommendations

- JVs with German and Chinese firms for domestic market and later for exports: With Pakistan's market, it is possible to scale up. ("2,000 hospitals offer a potential market for 17 million surgeries per year"¹¹⁰).
- EU will implement Medical Devices Regulation from 2024. Need for strong focus on compliance. Government may bring in foreign experts.

¹¹⁰ PBC report

- Better self-regulation by industry for product quality by "provision of raw materials from a central SIMAP¹¹¹ warehouse and SIMAP approved certification requirements for exporters"¹¹².
- > Government may set criteria for reducing minimum export prices.
- Explore new markets in East and South Africa and ASEAN. Meet compliance requirements.
- Upgrade the Common Facility Center with among others newer heat treatment furnaces, newer CNC laser cutting machines, and more.
- > Use e-Commerce platform for B2C.

4. Boost pharmaceutical industry for import substitution and exports

This is a big impact initiative. Global trade in pharma products in 2021 was \$ 1.4 trillion¹¹³. Pakistan's industry is small in value. Its manufactures are about \$ 4 billion at the retail level¹¹⁴. Pakistan's export in FY 22 was about \$ 270 million¹¹⁵. Pakistan has about 700 pharma companies, though skewed in favour of large firms where the top ten companies had 46% market share in 2018. Industry growth has been over 10% annually between 2015-2020.

A large population, the 5th largest market size, and increased focus on healthcare means that Pakistan can increase the size of its production and move up to high quality, branded¹¹⁶ and super generics¹¹⁷. It can also consider moving into vaccine production. Pakistan imported medicine worth over \$ 4 billion in FY 22¹¹⁸, equal to the amount of its production. FY 22 may not be a true indicator of demand as imports that year grew by about 200% over FY 21's \$ 1.3 billion. Yet, there is potential for domestic production to grow, and in time to build exports. "Industry insiders claim that exports from the sector could reach USD 0.5-1 billion in about 3 to 5 years—after reaching this critical mass, export growth could become exponential"¹¹⁹.

According to PBC, estimated size of off-patent drugs global market would be over \$ 1 trillion by 2025, \$ 700 billion in branded generics and almost \$ 400 billion in generics. The industry is rapidly changing in demand and supply patterns. Demand in developing economies is growing because of increase in life expectancy, literacy, and awareness. Drugs based on small molecules, where Pakistan has experience, easily satisfy this demand. Industrial economies have moved to biologics or large molecules production. Pakistan must grow in cost efficient, quality small molecules, super generics, and simple biologics.

¹¹⁸ Min of Commerce

¹¹¹ Surgical Instruments Manufacturers Association of Pakistan

¹¹² PBC

¹¹³ Statista Global pharmaceutical industry

¹¹⁴ PBC

¹¹⁵ Ministry of Commerce Trade Statistics

¹¹⁶ Companies that produced generic drugs under a name. Pakistan's Getz Pharma produces statins under the brand name Lipiget.

¹¹⁷ A super generic drug is an improved version of an original drug which has lost product patent protection. The product patent for the original drug will have expired or have been circumvented by the company developing the super generics. Pharmaceutical Intelligence.com

¹¹⁹ PBC

But Pakistan needs a rigorous plan and a vision for this industry to move from its present model of basing production on over 90% imports. At present, most of its industry just compounds active ingredients with excipients¹²⁰, coats the pills, and packages.

PBC says that a "larger vision recognizes the gains from becoming leading global drug formulators of generics and branded generics, diversifying the product offering to include human vaccines, attracting foreign clients through contract manufacturing (outsourcing) facilities and/or clinical trials or Contract Research and Manufacturing Services (CRAMS), and limited drug discovery." Despite PBC's upbeat message, in recent years MNC presence has declined in Pakistan.

Issues:

- Regulation:
 - Complaints of excessive regulation by DRAP¹²¹.
 - Yet, DRAP regulation and enforcement is weak and uneven. It has led to multiple quality standards of manufacturing facilities.
 - Arbitrariness in price regulation, especially since its revision in 2020 "allows government discretionary pricing controls on certain categories"¹²².
 - MNCs in Pakistan produce merely for the local market. They do not export from Pakistan and have not pursued Stringent Regulatory Authority (SRA) approvals for their manufacturing facilities¹²³. They have not invested in new technology.
 - Registration of new molecules is uncertain and may take a long time.
 - Even with registered molecules, DRAP does not have mutual recognition arrangement with global regulatory authorities.
- As with other industries there are concerns about the cost and quality of labour, utilities, and technology, affecting competitiveness.
- > Need for more R&D and product innovation
- Active Pharmaceutical Ingredients API are all imported. For drug registration, the companies need to internationally source the reference drug or API from approved countries. DRAP does not have a Secondary Reference Library for access by our companies.
- Irrational duty structure on input. Though Pakistan borders two of the world's largest API producers, it has not added value to its own industry.
- > There are just two WHO approved quality control labs to certify production of a company.

¹²⁰ Excipients are inactive substances that serve as the vehicle or medium for a drug or other active substance

¹²¹ Drug Regulatory Authority of Pakistan, DRAP

¹²² PBC

¹²³ Concept of a stringent regulatory authority or SRA was developed by the WHO Secretariat to guide medicine procurement decisions and is now widely recognized by the international regulatory and procurement community. DRAP is not recognized as an SRA by WHO.

Recommendations:

- Such a major initiative with complex intervention may need a dedicated body that coherently forms and translates a vision for the industry and identifies, targets, administers and manages policy interventions.
- Industry raises questions about DRAP's control with the Ministry of National Health Services Regulations & Coordination. Other regulatory authorities are under the Cabinet Division and enjoy autonomy. This needs study.
- In its late incarnation, pricing regulations have become politicized and arbitrary. Pricing regime must be transparent based on clearly laid criteria. Some drugs may be placed outside pricing regulation. There should be a National Essential Medicine List with regulated price.
- DRAP needs major upgradation of capacity and a clear vision of its role straddling from control to promotion of the industry.
- MoC must include the pharmaceutical industry in its list of priority export sectors of the country.
- There are limits and documentation requirements for entering contract manufacturing. Such manufacturing helps in having a presence in the international market and in raising production standards and compliance ability. GoP may facilitate contract manufacturing without limits by having clearly identified criteria.
- In a later phase, GoP may pursue developing of vaccine under public private arrangements, where government agrees to long-term buy-back. Government, or the proposed new body, may help with technology transfer licensing from international partners and JVs with international firms, or through technical expertise by commercial consultants. Incentives such as tax holidays and duty-free import of plant & equipment may be approved. But these must always be time bound and based on preset performance criteria.
- GoP must make especial effort to help establish WHO-approved laboratories in the country that meet international standards. For vaccines production, DRAP must obtain WHO certification for its National Control Laboratory for Biologics
- A global presence requires upgrading of plants and premises to achieve Good Manufacturing Practice, GMP and other quality compliances.
- Government must help private sector with production of API (Active Pharmaceutical Ingredients). It may help with providing an overall enabling environment for manufacturing in industrial parks.

Import Substitution

From decades of globalization and open trade and investment regimes, US and the West have lately moved towards protectionism. This is both to serve their strategic interests and to develop domestic industry. It started with Brexit and US challenges to China. US and its allies began denying access to tech products to China. Disruption to the global supply chain from lockdowns during and after the pandemic is also a motivator. Economies have focused more on their respective regions or have looked inward within to strengthen industry. Specifically,

Pakistan's fragile and constant balance of payments deficit has drastically weakened our economy and now affects our sovereignty.



Figure 1.1: Pakistan's Economic Growth and Tariff Liberalization (1980-2020)

As seen from the graph above and below, tariff liberalization hasn't brought the economic boom it was supposed to bring¹²⁴. GDP's growth rate has been uneven but on the decline. Pakistan's manufacturing value added (MVA) share in GDP is negatively affected by trade liberalization. In 1980, MVA's contribution to GDP was 14 percent which declined to 11 percent in 2020. CAGR (Cumulative Average Growth Rate) for the past four decades shows that each year MVA declined by 0.5 percent. Reduction in tariff, added an additional burden from loss in customs revenue. Large budget deficit and decline in incentives for manufacturing ensued. To counter fragility, SBP kept monetary policy tight with high discount rate.

Low tariffs boosted imports at the cost of domestic industry. It caused massive exchange rate depreciation.



According to FPCCI, Pakistan could save about \$ 10.5 B by reviving production of iron and steel, cotton, oilseeds, enhancing refining capacity and petrochemicals processing. See Table below.

Source: World Bank, WITS database (2020) Misc Sources

¹²⁴ FPCCI, Import Substitution Opportunities - Reviving Pakistan's Steel Industry, Technical Report -September 2022, pages 14-15

Table 2.2: Import Substitution Combine Benefits

		Prot	ducts		
iron and Steel	Cotton	Oilseeds and Palm oil	Refinery	Petrochemicals	Total
	Cu	rrent Imports US	D billion (20	20-21)	
3.8	1.4	3.1	8	2	18.3 (32%)
		Imports saved	(USD billion	1)	
2.1	11	2.4 (0.5+1.9)	3.8	1.3	10.5 (18.7%)
		Time	Span		
1	4	6-7	5-6	1	

Source: FPCCI¹²⁵

Steel Industry

The steel industry's critical nature in an economy does not bear repeating. It is a key ingredient in many intermediate and finished goods. Without domestic production of steel in sufficient quantities and at a predictable cost, it is not possible for Pakistan to industrialize.

It is a factor intensive industry. Steel production occurs in large factories, needing major capital equipment. It needs reliable supply of iron ore, coal and coke, energy, and labour. The high cost, risks, and moderate returns make it difficult for new investors to enter the industry.

That is why government support is key.

The industry needs help with capital input, infrastructure, trade facilitation, and comforts at the operational stage with long-term commitment. PQA is an example of infrastructure support for one industry. It was set up also to facilitate iron ore and coal imports for Pakistan Steel.

In the five years between 2016 and 2021, Pakistan annually produced between three and five million tons of billets¹²⁶. Since 2015, Pakistan has produced no coke or pig iron¹²⁷. That suggests that the billets were made from imported iron scrap. In FY 21, imports totaled 7.7 million tons for \$3.8 billion. Of this, scrap import was 4.7 million at \$ 1.9 B. In FY 22, steel imports rose by 39% to \$ 5.3 billion. The unit value of scrap rose by 53%¹²⁸.

¹²⁵ FPCCI, Page 8

¹²⁶ A billet is classified as a semi-finished casting product and can be processed into final products such as bars, rods, tubes, pipes, wire and wire products. They are the product of melting iron ore or scrap iron

¹²⁷ Pakistan Economic Survey 2020-21, Page 36 of Statistical Appendix, Table 3.5

¹²⁸ MOC Trade statistics



Source: PIDE129

Import fills in the large and growing gap between production and demand. There was a deficit of 36 percent of demand in FY 2016-17. That increased to 40 percent in 2019-20. In 2020-21, total production was 8 (MT) whereas demand was 13.4 (MT).¹³⁰



FPCCI Study, Figure 4.2

¹²⁹ PIDE Knowledge Brief LSM - Pakistan Steel Industry Outlook, Uzma Zia and Hafsa Hina, Page 4, figures 4 and 5.

¹³⁰ FPCCI study on import substitution, Page 10





Below is the breakup of steel production in Pakistan. See next page for explanation of the components:



Source: Pakistan Bureau of Statistics (2020), Misc Sources

Long Products	Flat Products	Tubes & Pipes	Alloy & Engineering Seeds
Billets Robar Wire-Rod Angles Shapes Structural Sections Heams Gedders	Hot Rolled Coil Cold Rolled Coil Galvanised Coil Color Coated Coils	Spint Welded Pipes Polymer Coated Pipes Longitudinally Welded Tubes & Pipes Galvanising Seantless Pipes	* Bars * Matos * Forgings

Source: PIDE¹³¹

¹³¹ Explanation of long products: Rebar is short for reinforcing bar used for RCC construction. Wire rod is a semifinished product rolled from billet on a rod mill and is used primarily for the manufacture of wire. Flat Products: Hot rolled steel is used widely in agriculture equipment (harvester and tractors) because of its high strength level and formability. Cold rolled steel is an extremely ductile material, ideal for applications where precision is necessary. It is used in many applications like household appliances, furniture, lockers, and filing cabinets

When we talk of the steel industry, this is at play.

The price of import dependence:

In FY 22, quantity import of iron and steel scrap fell by 19% over FY 21. Yet, import value grew by 24%, as unit cost in dollars had grown by 53%. Also, per unit price of iron and steel finished imports grew by 26% in FY 22. This underlines the importance of having domestic raw material. Import dependence makes downstream industry open to global supply and price behaviour¹³².

In a recent study, FPCCI has compared the cost of imported scrap, shipbreaking scrap, and domestically mined iron ore. In FY 21, FPCCI estimate for unit price of imported scrap was \$

393.6 shipbreaking scrap to be \$ 176/ton, and use of domestically mined iron ore at \$ 120/ton. Their Rupee value is Rs. 75,000/ton, Rs. 34,200/ton, and Rs. 22,800/ton¹³³.

In 2021, use of domestic iron ore would have been over Rs. 50,000/ton cheaper than imported scrap. In 2022, it would have been cheaper by Rs. 100,000/ton, if it were to happen. This is the cost of import dependence that an economy must bear.



This is the schematic of the industry's production process.

¹³² Ministry of Commerce, Trade Statistics

¹³³ At Rs. 190 to \$ 1.

Present Pakistan's steel industry comprises the following:

1. One integrated steel plant, the Pakistan Steel Mills, with a capacity of 1.1 million tons. It processes imported coal and iron ore through the blast furnace and via converter technology produces finished items. The coal is made into hard coke, a carbon reducing agent. Put through the blast furnace with iron ore and limestone, it produces pig iron, slabs & billets. The Mills' useable products are hot-rolled flat products. Currently it produces nothing.



Source: Kentucky Geological Survey, University of Kentucky

- 2. Steel melters, who re-melt imported & local scrap. Most of these units are in the informal sector. Their products are continuous cast billets, thin ingots, and a non- standard product called 'runners.'
- 3. Steel re-rollers, use locally manufactured, ship breaking and imported rollable materials. The re-rolling sector's estimated installed capacity is over 6 million tons, though there is no definite data available¹³⁴. Their product mix includes rebars for the housing & construction sector and a wide range of structural steel sections for industrial and other applications.
- 4. Ship breaking industry is an up and down cyclical business in Pakistan. It supplies input to the re-rolling mills.

PACRA (Pakistan Credit Rating Agency) estimates total installed capacity of the steel industry to be 9 million tons¹³⁵. But in the last five years, the industry operated at between 35% (2019) and 60% (2017) of capacity¹³⁶.

GDP growth rate strongly affects steel industry production. In Pakistan, PSDP spending has a bearing on consumption¹³⁷. In 2020, Pakistan industry's total revenue was Rs. 150 billion. FY 22 imports were 7.6 times, Rs. 1.1 trillion (5.3 B x 220 Rs.).

¹³⁴ Pakistan Credit Rating Industry, PACRA, Steel Overview, Slide 20,

https://www.pacra.com/sector_research/Steel%20Sector%20Post%20Review%20Update_160113011 3.pdf

¹³⁵ Ibid

¹³⁶ Pakistan Economic Survey

¹³⁷ PACRA page 18

Known reserves of iron ore in Pakistan is over 1.4 billion tons¹³⁸, mostly in Balochistan and Punjab (Kalabagh is the biggest site). In the three years between FY 19 and FY 21, iron ore production was negligible in Pakistan, ranging between 570 and 800 thousand tons, or 0.05% of reserves. The ores were most likely consumed in the informal sector. Two of the re-rolling mills with blast furnaces may also have used the ore.

The ratio of iron ore to steel is 1.5 X. That is, 1.5 tons of iron ore produces 1 ton iron (World Steel Association). Present estimated demand of 13.5 million tons of iron and steel in the country needs 20 million tons of iron ore, less than 2% of known reserves. Iron ores reserves can fulfill the needs of current production for the next few decades. With a saving of Rs. 50,000/ton to Rs. 100,000/ton to the economy, investment in iron ore mining is important. FPCCI estimates a saving of \$ 1.9 billion/year from use of iron ore at present level of demand.

Supply of domestic iron ore would help improve capacity utilization of downstream steel industry. For the present there is enough downstream capacity in the country to meet a large part of present demand for steel.

The FPCCI study calculates the benefit of reviving the Pakistan Steel Mill to be @ \$ 450 to \$ 600 per ton¹³⁹. This amounts to \$ 250 million in the first year of revival and \$ 640 million in the third year. Since Pakistan Steel Mills is the sole source of supply for hundreds of medium and small foundries in the country, it is extremely important to revive the Mill¹⁴⁰.

Issues:

- > As with many areas there is no resolve in GOP to improve domestic supply of steel.
- Dumping of steel first by China and Ukraine and later by Canada and Russia: GoP has responded with remedial measures, but it is a game of catching up. Our industry suffers.
- > Also, less expensive Chinese finished goods compete with our production.
- > Informal flows, especially via ATTA, adds another layer of noise.
- > The industry is hobbled by several other issues:
 - i. High cost of utilities.
 - ii. Gas shortage with frequent power outages. Energy is an industry raw material.
 - iii. According to the Steel Melters Association of Pakistan, about 80% of the countries steel producing furnaces are located in Lahore and Gujranwala (EDB Report, 2010: 20). A major hurdle to the industry is uncertain availability of power (though much improved now). The industry needs dedicated or reliable power supply.
 - iv. Access to credit and its high cost.
 - v. The country's challenging environment for business, especially cost of credit, cost and supply of utilities, and availability of raw materials prevent firms from scaling up. Most

 ¹³⁸ Planning Commission, Strategy for Mineral Sector Development in Pakistan, Dr. Syed Akhtar Hussain Shah, Page 11, and Dawn, Evolving iron ore mining industry, November 2, 2015.
¹³⁹ FPCCI study on import substitution. Page 24, Table 8.1

¹⁴⁰ Industrial Policy, Its Spatial Aspects And Cluster Development in Pakistan, Abid A. Burki, Kamal A. Munir, Mushtaq A. Khan, M. Usman Khan, Adeel Faheem, Ayesha Khalid, Syed Turab Hussain, LUMS, Page 184

melting, re-rolling, and fabricating firms, in particular, have small factories compared to their competitors in steel-exporting countries.

- vi. Given its dependence on import, the Industry has suffered from devaluation of the Rupee, eating into gross margins.
- a. Steel Industry has high working capital needs. Cost of capital is high and affects firm efficiency and profits.
- b. The steel industry is very capital intensive. There is need to reduce risk and offer comfort for its development (with sunset). Remove hurdles such as multiple taxes and frequent change in tax rates.
- c. Pakistan Steel Mills and most re-rolling mills have outdated technology. Use of obsolete and energy inefficient technology raises production cost and affects quality and standard of output.

Recommendations:

- a. Revive the Pakistan Steel Mill. All studies especially LUMS and FPCCI make the recommendation.
 - i. Experts estimate an investment of \$ 300-350 million (very back of envelope). They recommend partial privatization to get the needed capital and technology.
 - ii. We recommend that of the above amount, GoP must invest about \$ 100 million. This will ensure protection of Pakistan's interests in a key industry. It would also help the private party share risk. Also, GoP will have an interest in staying true to the duty protection and other comforts that the industry is offered.
 - iii. LUMS recommends keeping the steel mill in control of the public sector, "however, governance and transparency in its operations should be achieved. A possible way of addressing the problem of steel mill management is to contract it out to a professional steel management company using a transparent international tender". They say that management contracts should be negotiated against strict targets and the remunerations should be tied to the performance against these targets. It is a point open to discussion.
 - iv. The Mills' capacity of 1 million tons operating at 90 percent could reduce import and save USD 600 million annually, according to FPCCI. Even if optimistic, the return on investment is healthy.
- b. In the medium term, triple the capacity to 3 million tons, as provided in its original concept¹⁴¹.
- c. Incentivize further steel production with the goal of producing 8 million tones of steel indigenously in ten years by establishing an industrial park¹⁴².
- d. Invest in the enhancement of existing knowledge resources. For this a steel and metallurgy institute is necessary.

¹⁴¹ LUMS page 185

¹⁴² Ibid

- e. Promote iron ore mining:
 - i. FPCCI estimates that substituting 5 million tons of imported steel scrap with iron ore needs investment of around USD 700 million¹⁴³. Obviously, not all in one year.

Red	commendations
≻	There is need for a long-term policy for the sector, with emphasis on
>	Create a consortium of private foreign and domestic mining companies for modern mining. If necessary, take public equity for
≻	Help with scaling up mining operations
≻	Incentivize steel industry to use Iron Ore as a raw material through tax rebates
≻	Harmonize taxes, levies & royalty with world benchmarks. Not to place our
≻	Resolve energy availability issues. Consider dedicated supply for mining
>	Encourage setting up steel mill/s at the mining sites
Rev	vive Pakistan Steel Mills
>	Actively seek international private partner. Prepare very clear roles for the private party and GoP and stick to them with time lines. Decide on best
>	Allow sweeteners if necessary for success. But all comforts must be linked to performance and must have sunset.

- > Revived project must have dedicated power source.
- Incentivize linkage of steel industry.

¹⁴³ FPCCI, page 26

Chemical Industry

In trade parlance, chemical is a broad term whose meaning depends on context. At various times, it includes petroleum, pharma, or petrochemicals.

This section is about petrochemicals. Worldwide, this has been a fast growing manufacturing sector, despite frequently high energy prices. And it has seen many innovations.

Chemical industry comprises three stages:

- a. Basic Chemicals:
 - i. Naphtha/Gas cracker with down stream processing to produce Ethylene, Propylene, Butadiene.
 - ii. Aromatic complexes to produce: Benzene, Toluene and Xylene.
- b. Second stage
 - i. Production of Polymers (low density polyethylene, linear low density PE, synthetic fibres, elastomers (rubber like solid with elastic properties) and other petrochemicals, such as solvents
- c. Third stage: Products
 - i. Specialty Chemicals: A wide range of chemicals products for crop protection, paints and inks, colorants (dyes and pigments).
 - ii. Consumer Chemicals: Sold directly to the public, such as detergents, soaps, and other toiletries.

A dynamic petrochemical industry boosts economic growth and industrial development because of its extensive forward and backward linkages. As we see below, the sector touches every part of our daily lives.

Petroleum products such as natural gas, gasoline, naphtha, kerosene, fuel and lubricating oils, paraffin wax, and asphalt are the feedstock for petrochemicals. Natural gas and naphtha, the latter a byproduct of oil refining, are key. Processed through a cracking plant, they produce olefins: Ethylene, Propylene, Benzene, Butadiene, and other byproducts. Ethylene and propylene are important sources of industrial chemicals and plastic products. Butadiene is used in making synthetic rubber.



Oil refinery also produce 'aromatics' such as toluene and xylene.

We see the sector's importance from the many goods it produces. Ethylene is used to make PVC for drainpipes, door and window frames and a bunch of goods. Propylene is used to make polypropylene for car batteries, auto interiors, toys, housewares and for medical applications.

Among aromatics, benzene is used in high-octane fuel production as well as other chemicals, such as pesticides, detergents, dyes, and more. It is also used to make plastics, resins, synthetic fibers, and rubber lubricants. Toluene is used to manufacture paints, adhesives and explosives. Xylene is used as a solvent in the printing, rubber, and leather industries.

Pakistan does not produce olefins and aromatics. Our companies such as Engro Polymers, Sitara Chemicals, Ittehad and Descon Oxychem import their raw material. Exposed to the vagaries of exchange rates and supply chain issues, growth of chemical and petrochemical industry has been limited in the country.

Going upstream to Steam Cracking for production of ethylene and propylene, or catalytic conversion in refineries to produce aromatics entails large capital outlay. But the saving in imports and GDP growth foregone (from ready supply of ethylene and propylene for downstream industry) imposes a much higher cost on the economy.

And postponing to build a cracking plant only makes it more expensive down the road. The cost of a Naphtha Cracker was \$ 350 million in the 1990s, as reported by Dawn. Its estimated cost grew to \$ 1.5 billion in 2010¹⁴⁴ and \$ 3 to 4 billion in 2017¹⁴⁵. The cost is \$ 5-6 billion now. The money will not be spent in one year. It will be three to five years before a cracker plant is up and operational.

This quote from a former Chairman FPCCI shows the loss to industrialization for not having an upstream industry, "Hardly 10 percent of the chemicals consumed within Pakistan are manufactured here, 90 percent are being imported"¹⁴⁶.

It is a familiar story in all sectors. Over 90% of pharma production depends on imports. Without mining iron ore and reviving the steel mill, steel industry in Pakistan only adds value at the last stages of the value chain. And they do so to make a limited range of products.

Imports:

Because Chemicals is variously defined, import numbers differ. Based on PBS data, Commerce Ministry stats inform that Pakistan imported Chemicals worth \$ 14.1 billion in FY 22. This includes medicine and fertilizer, not our immediate focus.

¹⁴⁴ Burki et al Industrial Policy

¹⁴⁵ Business Recorder "Naphtha cracker to be set up in Pakistan in the next 5 years' Interview with Chairman FPCCI, and Chairman Tufail Chemical Industries Limited, Zubair Tufail" BR Research December 22, 2017

¹⁴⁶ Zubair Tufail in Business Recorder

Minus those two items, Pakistan's imports were:

	FY 19	FY 20	FY 21	FY 22
INSECTICIDE	185,557	152,282	177,911	188,571
PLASTIC MATERIAL	2,273,350	1,953,932	2,459,385	3,251,079
OTHERS	4,478,268	3,729,114	4,328,677	5,664,095
TOTAL	6,937,175	5,835,328	6,965,973	9,103,745
Total in B \$	6.9	5.8	6.9	9.1

Source: SBP

Major import items within these broad groups are given at the end of this section.

With a robust petrochemical industry, Pakistan could substitute imports. Later, once our firms become competitive, they may begin to export, either polymers or products. Our escalating goals should be to a. reduce imports, b. boost downstream production and c. increase export. Imports cannot input other linked industries the way domestic input supplies can.

To achieve the above, Pakistan needs an integrated petrochemical industry. For the establishment of a fully integrated industry, a naphtha cracker plant in the country is key. Many GoP studies emphasize the importance of having a Naphtha cracking plant in the country.

Pakistan has a crude oil refining capacity of 19.5 million Tons/annum. In the last ten years, the four refineries together produced between 400,000 and 1 million tons Naphtha. Their production is exported for want of facilities to further process it in the country.

Having this foundation would induce the industry to produce a range of products from plastics, synthetic rubbers, fertilizers, explosives, solvents, dyes, and pharmaceuticals.



Globally, price of Naphtha has been volatile, see Fig above¹⁴⁷. In FY 21, Pakistan exported 97 thousand tons Naphtha at \$ 339/ton¹⁴⁸.

Along with steel, the chemical industry is key to industrialization in Pakistan. Value addition in petrochemicals is higher than in most other industries¹⁴⁹.

A Naphtha cracking plant breaks Naphtha carbons at high temperatures of over 800 degrees Celsius to produce essential petrochemical feedstocks such as ethylene, propylene, mixed-C4 and pyrolysis gasoline (PG).

Given the size of investment needed, it can't be done by the private sector alone. It needs public sector equity and guarantees along with foreign and domestic private ownership. Despite the travails that hobble the economy at present, GoP must decide early even if actual financial close takes time. One reason we stay in an endless loop of external instability is lack of industrialization to substitute imports and grow exports.

Among others, the Indian and Singapore governments have played an active role in setting up cracker plants. In India, many cracker plants are either state owned or in public-private partnership. India's current ethylene capacity is 7 million tons/year. In addition, there are six aromatic complexes in operation with a combined Xylene capacity of about 5.5 million tons¹⁵⁰. With 50,000 downstream processing units, India's present demand for plastics is 24 million tons/year.

Petrochemical Corporation of Singapore (Pte) Ltd, started as a JV between the Government of Singapore, The Development Bank of Singapore and the Japan-Singapore Petrochemicals Company Limited (JSPC). Since then, the government and the development bank have divested. It is now owned by JSPC, Qatar petroleum and Shell¹⁵¹. It is a fine model to follow.

Investments in naphtha cracker worldwide are dependent on local availability of feedstock and downstream demand. China and India are the demand centres therefore more investments have been made in naphtha crackers.

But demand is chicken and egg. Availability of olefins and aromatics helps create demand. Higher demand brings in more investment.

Recommendations:

- Set up a Department of Petrochemical under the Petroleum/Energy Ministry or the Industry ministry. Preferably staff appointed there must have professional education and background. Additionally, have the assigned officers trained by foreign experts in the field's many specializations.
- > In parallel, prepare a perspective plan for the petrochemical industry. It will make

¹⁴⁷ Source of graph: Statista

¹⁴⁸ MoC Trade Stats

¹⁴⁹ Department of Chemicals and Petrochemicals, India, About

Petrochemicals, https://chemicals.nic.in/advisory-forum

¹⁵⁰ Ibid

¹⁵¹ Petrochemical Corporation of Singapore, Company profile, https://www.pcs.com.sg/about-us/company-profile/

demand and supply forecasts based on which it will plan for what it takes to increase domestic production.

- > The perspective plan will also recommend policy options.
- The goal of the plan must be:
 - To develop value added and quality petrochemical products in Pakistan, at globally competitive prices.
 - Prioritize (preferably eco-friendly) processes and technologies.
 - Innovation of newer applications and products with focus on sustainable development.
- The plan must give a strategy for development of the sector. This would include GoP and provinces' support of industry with infrastructure, training and development programmes, dedicated R&D help, and conceptualizing financing arrangements.
 - Infrastructure support should include earmarking a large tract of land for setting up manufacturing facilities producing petroleum, chemicals & petrochemicals, with associated services and infrastructure¹⁵². These regions would include SEZs or dedicated 'Plastic Parks'.¹⁵³
 - The proposed Department of Petrochemicals must launch a scheme for building 'Centres of Excellence'. These research centres will be outsourced to universities, financed by GoP and private sector. The two financiers will jointly monitor performance of the centres on pre-set performance indicators.
 - The Centre/s of Excellence will make long-term investment in R&D in the petrochemical industry. Industry and academia would together research use of raw materials, energy efficiency, process/operation improvement, technology forecasting and adoption of new technologies, including recycling technologies. The centres would research new process technologies for high performance polymers (green processes etc.) and work on new platforms as enablers for advanced polymeric materials. R&D would also focus on development of molds, dies, and tools.
 - The above Department must also institute National Awards for innovation and especial achievements in petrochemical production. They must be given only when earned.
 - The petrochemical industry would support the national goals for the economy to meet basic needs of food and water security, shelter, expand lines of clothing and textiles, health care, and a host of other areas.
 - For example, it would be possible for industries to use petrochemical products in modern farming through plasticulture¹⁵⁴, packaging for processed foods and consumer

¹⁵² https://chemicals.nic.in/sites/default/files/PCPIRPolicy.pdf Page 2

¹⁵³ A term used in India for clusters with common facilities.

¹⁵⁴ The term plasticulture refers to the practice of using plastic materials in agricultural applications. The plastic materials themselves are often and broadly referred to as "ag plastics". Plasticulture ag plastics include soil fumigation film, irrigation drip tape/tubing, plastic plant packaging cord, nursery pots and bales, but the term is most often used to describe all kinds of plastic plant/soil coverings. Such coverings range from plastic mulch film, row coverings, high and low tunnels (polytunnels), to plastic greenhouses. There could be yet unknown environmental effects of their use.

non-durables, and better performing plastics for automobiles and consumer durables. Similarly, they would boost telecom and information technology products and medical applications.

These are ambitious goals. But they must be achieved, step by step and incrementally. They are doable with especial government focus and attention.

Developing the chemical industry would re-orient our industrial structure from low tech low cost production to capital and tech intensive products. It would reduce reliance on imports and, after gaining proficiency, build exports.

Recommendations made in other reports on industrial policy fit in with this paper's ideas (slightly edited):

• Begin groundwork for the establishment of a petrochemical complex in Hub, where a refinery exists already. This complex should include a refinery, a naphtha cracking facility, and facilities for manufacturing Petrochemicals. Naphtha from other refineries would also be processed here.

While the world has moved to MMF-based textiles, Pakistan has stayed dependent on cotton- based goods. The establishment of a Naphtha cracking facility should boost the downstream development of MMF textiles, technical textiles, and facilitate the processing sector, dependent on imported chemicals.

 The Petrochemical plant should be a government led, economically viable project with equity from private investors. In order to make it feasible, government may levy import duty rates that offer protection from import to all chemical-related end products as soon as the facility starts production.

List of Petrochemical items imported by Pakistan in 2021 39 - Plastics and articles thereof	Million USD
390110 Ethylene polymers; in primary forms, polyethylene having a	453
390120 Ethylene polymers; in primary forms, polyethylene having a	338
390210 Propylene, other olefin polymers; polypropylene in primary	750
390230 Propylene, other olefin polymers; propylene copolymers in	161
390330 Styrene polymers; acrylonitrile-butadiene-styrene (ABS)	74
29 - Organic chemicals	
290250 Cyclic hydrocarbons; styrene	122
290531 Alcohols; acyclic, diols; ethylene glycol (ethanediol)	243
291736 Acids; aromatic polycarboxylic acids; terephthalic acid and	141
55 - Man-made staple fibres	
550320 Fibres; synthetic staple fibres, of polyesters, not carded, combed, or otherwise processed for spinning	163
550410 Fibres; artificial staple fibres, of viscose, not carded, combed, or otherwise processed for spinning	401

Source: World Bank data: World Integrated Trade Solutions WITS

SEZs: Special Economic Zones

As a late entrant, Pakistan must think through its strategy for making SEZs a success. It is not cheap to build one. And we must compete with others to attract investment. In 2018, there were 5,400 zones in 147 markets, with vastly varied levels of success and failures. The risk of failure is high, especially if the casual approach shown by GoP so far is an indicator. Also, our comparative advantage to attract investment is limited. Our main advantage of low labour cost is reduced by equally low productivity and soft infrastructure that refuses to improve, despite government claims.

What is an SEZ, how successful have they been and What must Pakistan do?

SEZs create special environments helpful to businesses in economies that otherwise face difficulties in doing so across the country. This way they can remove the "binding constraints" that limit economic growth, due to limited resources and implementation capacity.

It is a geographically delineated and secure area with:

- A special regulatory regime, more liberal economic laws than in the rest of the country regarding labour, land use, and foreign investment.
- Public services with efficient customs, fast-track registration and licensing, often through "one-stop-shop" services.
- Infrastructure that are much better and more reliable than the rest of the country, such as roads, power, water and connectivity.
- Fiscal incentives with capital freedom and certain levels of tax incentives and subsidies.

Evidence based studies confirm that SEZs have been successful in many countries, especially China, South Korea, Taiwan, Vietnam, Bangladesh, Mauritius, the Dominican Republic, and El Salvador. Normally over 80 percent of the quantity produced in these zones must be exported.

How successful have they been? Success isn't automatic.

In the case of China, the prime example of SEZ success, parallel investment in human resources and local industry were significant in how SEZs functioned. Also, cooperation between levels of governments, central, provincial and local, under a long term plan was crucial. They created spillover effects like forward-backward linkages with domestic enterprises. This contributed to the development of entire provinces, as well as the country.

Fiscal incentives are not enough. In Africa, many countries did so at unprecedented levels. But most Zones there were not successful¹⁵⁵. The location decision was important. How provision of infrastructure and efficient processing of approvals and custom clearance played out mattered more. On cost and benefits, the initial cost, for instance of fiscal and non-fiscal incentives for investors, is often higher than the gain¹⁵⁶.

¹⁵⁵ https://www.worldbank.org/content/dam/Worldbank/Event/Africa/Investing%20in%20Africa%20For um/2015/investing-in-africa-

forum-global-experiences-with-special-economic-zones-with-a-focus-on-china-and-africa.pdf ¹⁵⁶ https://surbanajurong.com/wp-content/uploads/2018/06/Perspectives 28.pdf

Also, special economic zones are only a steppingstone in a bigger strategy for industrialization and diversification of the economy.

Yet successful SEZs are a great vehicle for international trade and FDI to drive economic development. They reassure investors and those seeking risk mitigation. There are examples of superb private sector led success. But there are also cases of moderate success or outright failures. In China, SEZs "at national level accounted for about 22% of national GDP, 46% of FDI, and 60% of exports and generated in excess of 30 million jobs". Though this needs the economy to do what China has done in terms of HR, infrastructure and institutional support.

In terms of export growth and diversification through FDIs, SEZs played a positive role in Malaysia, Bangladesh and Vietnam, but not in India. The knowledge gained in SEZs translated into spillover effects on the local market and stimulated domestic firms outside SEZs to enter the export market and to increase their production of export goods.

SEZs also were catalysts in industrial upgrading and technology. South Korea, Taiwan, Malaysia and the Philippines saw significant industrial upgrading in the electronics sector located in SEZs¹⁵⁷.

So, what should Pakistan do?

Pakistan is well positioned to make SEZs successful. It has the laws in place. It needs to detail a strategy. Its especial relationship with China and Saudi Arabia are important. It is in close proximity to capital rich states of UAE, Qatar and Oman.

But SEZs require a serious and concerted effort. They need an active and involved government from strategy to implementation. In doing so, GoP must engage all stakeholders, including national, regional, local and the private sector at all stages from developing the SEZ strategy to implementing it with measurable key performance indicators.

An easier path to success is for SEZs to focus on sectors. This would help meet the SEZ's diverse needs from infrastructure to workers' training and R&D support.

Based on the experiences of successful SEZ programs globally, the following are important for Pakistan to emulate:

- Strong government support as part of a long-term national development strategy.
- A robust legal and regulatory framework and focused institutions, including effective onestop-shop services.
- A prototype design for broader national reforms.
- A strategic location with sound infrastructure and strong connectivity.
- Where SEZs are sector specific, the management may focus on skills training and R&D support. China's example shows that one of the highest priorities of any zone is to provide customized and specialized education and training that generate, upgrade and deepen knowledge and skills.

¹⁵⁷ https://pedl.cepr.org/content/i-concept-and-definitions-sezs

Special Economic Zones: Lessons from the Global Experience. I. The Concept and Definitions of SEZs

- Undertake continuous technological and industrial learning, innovation, upgrading.
- To be a catalyst for structural transformation, GoP must ensure that zones are linked to key infrastructure (like ports, railways and highways) with good trade logistics and customs services.
- They must be well-matched to local resources that leverage the nation or city's comparative advantages (e.g., agro-processing or electronics); to be part of the global value chain; to be focused not only on exports, but also on the domestic market.
- Shenzhen's SEZ was advantaged by its geographical location with shipping and logistics enabling it to become an important manufacturing hub for the world as its foundation. Later, it could focus on technological innovations. The city's economic development and diversification then grew organically.

There are many other things for GoP, provinces and the private sector to do. But as a new entrant to establishing SEZs, for Pakistan, the above is a list that includes the most essential inputs the SEZs need to succeed. If the government is not prepared to do so, it is better to not begin the work. A failed attempt is expensive and would further damage the country's reputation from which it is hard to come back.

Because of the expense, the process requires very careful planning, design and management. The planning process should include a rigorous assessment of the demand situation, local market conditions, connectivity, the industrial base, the supply chain, the business environment, and land and labor supplies.

Despite the past successes of some "enclave" model zones (especially, export-processing zones), the success of contemporary zones is increasingly entwined with the local economy. Zones need to build on local comparative advantages, and to have local suppliers as part of their value chains.

Successful SEZs draw on local advantages, e.g., low-wage or semi-skilled workers, to become globally competitive. Global or regional competitiveness is what counts: being better than the host domestic economy is unlikely to be sufficient for viable SEZs.

Among these institutional support with high level engagement is key.

Many development experts and economists believe that SEZs can achieve industrial development in an efficient and effective way (Justin Yifu Lin and Celestin Monga, 2010). Investing in SEZs can:

- 1. Provide a bundling of public services in a geographically concentrated area;
- 2. Improve the efficiency of limited government funds/budgets for infrastructure; Facilitate cluster development, or agglomeration of certain industries; and
- 3. Enhance urban development by providing facilities conducive to improved living conditions taking advantage of economies of scale in provision of environmental services, such as water treatment plants and solid waste treatment plants.

Having said all that, special economic zones should only be used to address market failures or binding constraints that cannot be addressed through other options.

What kind of a Zone do we need¹⁵⁸?

The many types of industrial zones:

Name	Definition
Free Trade Zones	FTZs (also known as commercial-free zones) are fenced-in, duty-free areas, offering warehousing, storage, and distribution facilities for trade, transshipment, and re-export operations.
Export Processing Zones	EPZs are industrial estates aimed primarily at foreign markets. They of- fer firms free-trade conditions and a liberal regulatory environment. There are in general two types of EPZs: one is a comprehensive type, open to all industries; another is a specialized type, only open for certain specialized sectors/products.
Comprehensive Special Economic Zones	Comprehensive SEZs (also called "Multi-functional Economic Zones") are zones of a large size that have with a mix of different, industrial, ser- vice and urban-amenity operations. In some cases these zones can en- compass a whole city or jurisdiction, such as Shenzhen (city) and Hainan (province) in China.
Industrial Parks	Industrial Parks (also called "Industrial Zones") are largely manufactur- ing-based sites. Some multi-functional ones similar to "Comprehensive Special Economic Zones" (listed above) exit, but usually operate at a smaller scale. The parks normally offer a broad set of incentives and benefits.
Bonded Area	Bonded Areas (also known as "Bonded Warehouses") are specific build- ings or other secured areas in which goods may be stored, be manipulat- ed, or may undergo manufacturing operations without payment of duties that would ordinarily be imposed. To some extent, a "bonded area" is similar to a "free trade zone" or "free port." However, the major differ- ence is that a "bonded area" is subject to customs laws and regulations, while a "free trade zone" is exempt from these provisions.
Specialized Zones	Specialized Zones include science/technology parks, petrochemical zones, logistics parks and airport-based zones.
Eco-Industrial Zones or Parks	Eco-industrial zones or parks focus on ecological improvements in terms of reducing waste and improving the environmental performance of firms. They often use an "Industrial symbiosis" concept and green technologies to achieve energy and resource efficiency. Given the severe environmental challenges, an increasing number of countries is embrac- ing this new type of zone.

¹⁵⁸ https://pedl.cepr.org/content/i-concept-and-definitions-sezs, Special Economic Zones: Lessons from the Global Experience. I. The Concept and Definitions of SEZs

Why do we need industrialization?

- Need for Industrial Policy: Pakistan's low manufacturing value added/ GDP and resultantly falling exports with a stagnant structure are the main reasons for its economic vulnerability. Table 1 and Figures 1 and 2.
- Behind these weak indicators are low savings and investment, especially investment in the manufacturing sector, Tables 4 and 9, Figures 4 and 5. In turn, they result from a very weak macroeconomic framework. GoP's high debt servicing needs preempt the fiscal space at the expense of all other expenses. It also limits credit available for the private sector.
- Yet, it is chicken and egg. Falling public and private investment has stifled production, productivity and GDP growth, which in turn curtails government ability to invest in infrastructure and in human development.
- Figure 5 shows a direct link between the rate of manufacturing investment and export performance and a weak link with GDP growth. GDP growth depends also on infrastructure and other investments. The effect of falling investment rate on the economy is accentuated by a fall in labour productivity caused also by long-term low public investment, see later bullet.
- Exports are stuck in the same low-tech goods that the economy has exported for decades. Thus, exporters must compete on price, as new entrants step in the global market (e.g., Bangladesh, Cambodia, Kenya). Pakistan's standard products allows for little product differentiation.
- That is why the loss in Rupee value has helped exports but only to an extent, as its effect wears off. Exports also depend on production of quality goods, availability of credit and input costs. With the Pakistan Rupee in free fall during most of 2022 and 2023, exports first went up and then slid down. The resultant unprecedented high levels of inflation coupled with the exchange rate effect on inputs, have countered the effect of the devaluation, see Figures 9.
- Labour productivity, which is a key indicator of an economy's capability, has seen a major fall in Pakistan. In the 1980s, labour productivity grew at 4.2% per annum. In the 1990s, its growth was down to 1.8%. It fell further during 2000-2015 to 1.3% annually, and down to a mere 1% since 2007. On the other hand, in India during 2000-10, it went up by 5% annually.

This index measures growth in output per worker. It is determined by dividing GDP with the number of workers employed. Along with MIT's complexity index, 'Labour Productivity' is a key measure of economic progress. Three attributes determine labour productivity: increase in physical capital (machines and hard inputs), increase in human capital quality, and total factor productivity. The last is a measure of efficiency in use of resources and the contribution of technology to GDP growth¹⁵⁹. It is entirely linked to making and managing the right

¹⁵⁹ Rashid Amjad, Pakistan's Economy under IMF tutelage 1988-2022, Pages 145-146, for data and ideas in this para, See also WB's Pakistan @ 100, Human Capital Figure 3, page 13

investments in the economy. Nobel laureate Paul Krugman: "A country's ability to improve its standards of living over time depends entirely on its ability to raise output per worker"¹⁶⁰.

- As we progress through the Tables and Figures below, one aspect becomes clear. Since the 1980s, Pakistan's economic policy has been one of survival and 'youthful optimism', a belief that things would work out of our free spending ways. There has been no philosophy or strategy to guide economic policy. High capital inflows in the middle 2000s yielded high growth rates. Poor economic choice because of a lack of strategy did not lay the ground for sustained industrial growth. Gradually, the IFIs have assumed control of policy. Catchy phrases such as 'removing anti-export bias', 'private participation in infrastructure development', the redundant 'comparative advantage' and PPP took the place of well considered policy. There has been no space for nuanced or calibrated thinking. In fact, government stopped thinking. Like water in sand, Pakistan has accepted foreign advice and foreign aid. The consequences are for everyone to see.
- We see the need for industrial policy also because our total fixed investment to GDP ratio have been in the double digits (Table 3), while rate of manufacturing investment has hovered under 2%, Tables 4 and 9. Incentives for non-manufacturing (IPPs or Construction) and non-export manufacturing (autos) have taken away investment from efficient manufacturing.

	Table	1: Share o	of Manufac	turing as '	% of GDP		
	1970	1980	1990	2000	2010	2020	2022
Pakistan	15	14	15	10	13	11	12
BD	6	10	13	14	16	21	21
India	15	17	17	16	17	14	14
SL	16	17	13	15	18	16	18
Thai	16	22	27	28	31	27	27

See Table 10 for export diversification.

¹⁶⁰ World Bank Blogs, Productivity for prosperity: 'In the long run, it is almost everything', Christopher Colford, NOVEMBER 15, 2016, https://blogs.worldbank.org/psd/productivity-prosperity-long-run-it-almost-

everything#:~:text=A%20country's%20ability%20to%20improve,raise%20its%20output%20per%20wo rker.%E2%80%9D&text=Paul%20Krugman's%20conclusion%20about%20the,is%20widely%20share d%20among%20economists.









Figure 1: Manufacturing % GDP, 2022

Table 2: Trends and Relationships. Data for later use										
	1970	1980	1990	2000	2010	2020	2022			
Pakistan GDP Rs	48	235	1,016	4,243	14,867	47,540	66,950			
Rs/\$	10	10	21.44	51.77	83.8	158.0253	204.56			
GDP growth % 10 yrs avg	4.83	6.1	4.44	4.59	3.67	5.86				
Growth % Mfr VA, 10 yrs avg	5.49	8.21	4.04	7.59	3.12	10.16				
Pak GDP \$ B	4.8	23.5	47.3	81.9	177.4	263.5	327.5			
Mfr VA \$ B	0.72	3.29	7.1	8.2	23.1	28.9	39.3			
Exports \$ B	0.338	2.37	4.95	8.57	19.29	22.54	31.79			
Mfr exp%	44	45	57	73	69	73	77			
\$ B Mfr Exports	0.5	2.4	2.8	6.2	13.8	15.6	24.5			
Mfr export as % of total Mfr VA	69	73	39.4	75.6	59.7	54	62.3			

Table 3: Trend of GDP, Investment, and Trade											
	1960s 1970s 1980s 1990s 2000s 2010s										
Export/GDP	4.11	9.39	10	13.4	12.3	7.9					
Import/GDP	11	17	18	17	19.1	18.3					
Deficit/GDP	6.89	6.95	7.8	4	5.6	9.4					
Total Fixed Investment/GDP	14.8	20.5	3.7	7.8	15.7	10.7					
GDP growth %	6.76	4.8	6.1	4.4	4.59	3.67					



	Table 4																						
	2000	2001	2002	2003	2004	2005	2005	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Mfr Inv/GDP	3.7	3.6	3.8	3.3	3.5	3.7	3.4	2.9	2.9	2.6	1.8	1.4	1.3	1.6	1.4	1.5	1.6	1.6	1.7	1.6	1.4	1.65	1.5
Exports/GDP	11.7	12.9	12.8	13.5	12.6	13	13	11.9	11.6	10.9	П	11.6	10.5	10.6	10.3	8.7	6.6	6	6.5	7.1	7.1	7.3	
GDP Growth %	3.65	2.37	5.64	7.7	7.53	5.56	5.54	4.99	4.99	0.36	2.58	3.62	3.83	3.68	4.05	4.06	4.56	4.61	6	3	-094	5.74	5.97

Figure 4: Manufacturing Investment/GDP % 2000-2022



Table 5: Trend of Export to Import Ratio											
FYs	1951- 60	1961- 1970	1971- 1980	1981- 1990	1991- 2000	2001- 2010	2011- 2020				
Import M \$	298.3	630.9	2,128.6	5,935.3	9,932.8	23,809.8	23,044.4				
Export M \$	193.7	247	1,155.7	3,420.1	7,679.1	14,565.8	53,526.1				
Export/Import %	65	39	54	57.6	77.3	61.1	43				
Import > Export %	54	156	84	73.5	29.3	63.3	132.3				



As a result, ratio of exports to imports has been on a 30 year decline since 1990s (the data is average ratio for the decade). As trade deficit grew, it was financed by debt. Clearly, tariff reduction did not boost exports (Figure 5). Imports became a convenient substitute for investment, helped to no mean extent by the mismanagement of Afghan transit trade. In FY 23, restrictions on LCs and imports made the headlines, but the export/import ratio for FY 23,

July-Jan was 45%, about the same as the average for the decade, Table 5. During July-March FY 23, exports of goods and services fell by 8% and imports by 42%¹⁶¹. YoY, for July-March FY 23, current account deficit has declined by 75%. It is an option that GoP seems comfortable with and perhaps better than the liberal approach to imports under IMF programmes.

Table 6: Share in Total Exports %												
Manufactured	41	52	57	75.8	70.6							
Semi Mfr	20	17	24	11.6	12.5							
Primary	40	31	19	12.6	17							

Share of manufactured goods in total exports has grown, but there has been no improvement in value addition. So, exporters' profits comes from incentives and devaluation. It is not just textiles and apparel. Surgical goods is mostly an OEM industry, producing on orders and specs of buyers in Germany, UK, USA who print their labels on our products. Pakistan's industry concentrates on the low-end. It hardly sells under its own name. Its world market share has been at 0.7% for many years. Industry has stayed in that place because that is where its main players prefer to be¹⁶².

Agriculture sector too has performed poorly, so primary exports (e.g., cotton, wheat) have fallen. Because of falling agriculture production, export of semi-finished goods such as yarn (a major staple in the past), has fallen. Pakistan is now an importer of cotton and yarn. Governments have devalued the importance of public investment. Overall, number of spinning mills declined. Spindles hours worked has fallen by 75 % between 2010 and 2020, though recovered fully in 2021 and 2022. Leather exports have fallen, perhaps because of demand from Pakistani manufacturers.





¹⁶¹ SBP, Pakistan Balance of Payment, April 2023

¹⁶² PBC



Figure 8: Pakistan Weighted Applied Tariff

Table 7: Effect of decline in tariff protection on Investment, Export and GDP, %										
	1995	2000	2005	2010	2015	2020				
Weighted Applied Tariff	44.95	23.12	13.01	9.74	10.66	9.54				
Investment/GDP Ratio	17.03	15.97	16.12	14.2	14.1	13.1				
Export/GDP Ratio	13.5	11.7	13	10.9	8.7	7.1				
Import/GDP Ratio	17.2	14.1	18.6	19.6	16.9	14.8				
GDP Growth Rate %	5.06	3.91	7.52	2.58	4.06	-0.94				



Figure 9: Weighted tariff Vs Export and GDP growth %

The belief that increase in imports boost exports did not work in Pakistan. We see a rapid decline in tariffs in Pakistan since 1995 (measured on the right axis in Figure 9). Exports have been in constant decline along with reduction in tariff. GDP growth too has been uneven. An economy is better off with selective tariff reduction in tariff and selective protection (to boost competitiveness), under a well thought out industrial policy. Great thought must be given to such decisions in consultation with the private sector. Blanket economic and trade policy measures under IFIs 'one size fits all' approach has not worked.

Lower tariff could have boosted investment/GDP, but that too fell. Tariff rate is just one of several considerations in investment decisions. Availability of credit and its cost, business confidence, economic dynamism and availability of social and physical infrastructure are equally important. Also, lower tariffs and Afghan transit trade have left investors vulnerable to unfair competition.

Frequent changes in SBP's policy rate are a source of great uncertainty for private investors. For one, tight monetary policy has made credit scarce for them. Uncertainty makes the situation worse. In 18 months between September 2021 and April 2023, there have been ten changes in the policy rate that have taken the rate from 7.25% to 21%. See Table 8. For the effect of a tight monetary policy on credit, investment, production and exports, see Table 9 and Figures 10 to 16.

Table 8: Frequent Policy Rate Changes						
21.5.2016	5.75					
1.01.2018	6					
28.5.2018	6.75					
16.7.2018	7.5					
1.10.2018	8.5					
30.11.2018	10					
1.2.2019	10.25					
1;4;2019	10.75					
21.5.2019	12.25					
16.7.2019	13.25					
17.3.2020	12.5					
24.3.2020	11					
17.4.2020	9					
18.5.2020	8					
26.6.2020	7					
26.9.2021	7.25					
22.11.2021	8.75					
15.12.2021	9.75					
8.4.2022	12.25					
25.5.22	13.75					
13.07.22	15					
28.11.22	16					
24.1.23	17					
3.3.23	20					
5.4.23	21					

Table 9: Effect of Policy Rate on Growth Indicators										
	FY 16	FY 17	FY 18	FY 19	FY 20	FY21	FY 22	FY 23		
Policy rate	5.75	5.75	6.5	12.25	7	7.25	13.75	21		
Private mfr credit growth %	12.9	19.9	17.6	14.5	5.7	7	25.4	6.2		
Mfr Inv/GDP	2.1	2	1.9	1.9	1.7	1.6	1.5			
Manufacturing growth %	3.69	4.87	7.08	4.52	-7.8	10.52	9.8	-5.56		
GDP growth %	4.56	4.6	6.1	3.12	-0.94	5.74	5.97	0.5		
Exports growth %	-12.17	-1.76	13.66	-1.09	-6.8	18.28	25.6	-11.7		
Change in Rs/\$ Value	0	-0.02	-15.8	-31.4	-4.4	5.6	-29.98	-38.5		

Figure 10: Policy rate

Figure 11: GDP and Manufacturing VA Growth Rate Vs Policy Rate (above, Fig 10)


In Figure 11, we see the effect of rate changes on production and growth. The rate increased in 2019 and manufacturing value added fell in 2020 along with GDP. Rate decline was followed by improved indicators.



Private credit availability has a weaker link (and a more accentuated one) with changes in rates. Manufacturing credit availability is also contingent on competition from government and from other sectors, e.g., construction or cement.



Again, manufacturing has been more resistant to temporary stimulus. It depends equally on long-term investment in human development, physical infrastructure and R&D, further highlighting the need for a comprehensive Industrial Policy.



All indicators show a downward trend. Export has responded to changes in Rupee value, but with no change in the underlying strength of our industry, the effect is not long term. In recent months, LCs restriction discouraged imports, though the export/import ratio for FY 23, July-January was 45%, not much more than the decade's average of 43%. During this period, exports of goods and services have fallen by 8% and imports by 42%.



The red line showing Rupee values is the change rate. The line's move from negative to zero does not indicate appreciation of Rupee. It shows that that year the Rupee value stayed the same and did not decline. Of course, this must have an effect on the REER.



Export Diversification

Table 10: Export Diversification: Share in Total Exports for Groups of Products %						
	2000	2005	2010	2015	2020	
Textiles Mfrs	65	60	53	56.4	58.5	
Knitwear	8	11	9	10	13	
Bed Linen	5	10	9	8.8	10	
Towels	2.3	3.5	3.5	3.3	3.3	
Apparels	8.5	7.7	6.6	8.8	12	
Food/primary	9	9	17	19	20.4	
Other mfrs	25	31	30	25	21	
Sports goods	3	2	1.5	1	1	
Leather mfrs	4	3.5	2.4	2.5	2.2	
Leather	2	2	1.8	3.7	1	
Chemicals and Pharma	1	2.6	3.6	4.1	4.7	
Petroleum goods		3	5.4	2.5	1.3	
Engineering		1	1.2	0.9	0.8	

Figure 16: Change in Rs. Value and GDP Growth



Table 11: Review of industry: Growth and Declining						
	2011	2021	10 years change	Simple avg change/yr		
Cotton Yarn	2,939.5 M KGs	2,594.7 M KGs	-12 %	- 1.2%	Cotton Yarn CD @ 11% Raw Cotton CD @ 0%	
Cloth	1,023 M Sq Meters	969.8 M Sq Meters	-5.3 %	- 0.5%		
Fertilizer Thousand Tons						
Fertilizer Total	5,916	8850.7	49.6	5%	CD 0%	
Urea	4,552.1	6,294.9	38 %	3.8 %	CD @ 0%	
Dia- Ammonium phosphate	663.8	788.7	19%	1.9%	do— Contingent on supply of gas	
Food and Tobacco						
Veg ghee	1,092	1,455	33%	3.3%	CD on oil Rs. 9,050 to Rs. 15,000/ton, about 4 to 5%	
Sugar	4,169	5,694	36.5%	3.7 %	CD on crystallized cane sugar 20%	

Figure 17: Export Concentration or Diversification ? % Share in Total Exports

Beverages M Litres	1,482	3,449	133%	13.3%	Mfr under franchise		
Cigarettes Million Unit	65,403	51,554	-21%	-2.1%	Mfr under franchise, but ATTA imports		
Cement	28,716	49,803	73 %	7.3%	CD on cement 20%		
Rubber	Rubber						
Motor Tires	9.2 M	9.5 M	3.2 %	0.32 %	CD 16-20%		
Motor Tubes	19.1 M	22.4 M	17.2 %	1.7 %	CD 20-35%		
Cycle Tires	2.9 M	3.5 M	20.6%	2%	20%		
Cycle Tubes	6.5 M	6.8 M	4.6%	0.46 %	20%		
Chemicals Thou	sand Tons						
Soda Ash	378	594	57%	5.7%	CD 11-20%, Growth resulting from higher demand for detergents, paints etc		
Paints and Varnishes	25,673	90,166	250%	25%	CD@ 0 to 16% Growth doubled in FY 21 over 20, because of construction incentives		
Footwear Polish and Cream	1,018.6	1,035.7	1.7%	0.17 %	CD: 11-20%		
Transport, Machinery & Electrical Appliances, Thousand Units							
Bicycles	345.3	79.3	-77%	-7.7%	CD@ 35%, but leakage via Afghan transit trade		
Sewing machines	47.0	20.2	-57%	-5.7%	20% on household machines, but ATTA		
TV Sets	425.6	209.7	-51%	-5.1%	16%, ATTA		

Other Selected Industries						
Electric Bulbs	79.3 M	51.3 M	-35%	-3.5%	CD @ 16% ATTA imports	
Paper & Board	206 Th tons	501 Th tons	143%	14.3%	0 to 20%	
All paper	229 th tons	229 th tons			CD @ 16%	
Steel products, Thousand tons						
Coke	301.7	0			Steel mill closed	
Pig Iron	433.1	0			Steel mill closed	
Billets	1,629	4,777.0	193%	19.3%	CD @ 0% on scrap for rerolling	

Industries that have grown:

Fertilizer, Vegetable ghee, sugar, beverages, cement, cycle tires, soda ash, paints, paper and board, steel billets.

Factors behind the growth:

Fertilizer, growth @ 5% per annum: Increased production at home has replaced imported fertilizer. Pakistan imported 2.5 million tons of fertilizer in FY 2010. Import in FY 2022 was 1.7 million tons¹⁶³. With production of several crops in decline, there is no noticeable increase in fertilizer off take, despite growth in population. Off take in FY 10 was 4.4 million tons. It was 4.5 million tons in 2020 and 5 mt in 2021. Volume of fertilizer production depends on supply of gas to the fertilizer plants. Production increases when gas supply improves. Consumption or off take also increases in years when government offers subsidy for use of fertilizers.

"Fertilizer-responsive crop varieties, supplementary irrigation water, and a favorable policy environment in Pakistan have induced fast growth in fertilizer demand. On the supply side, the availability of gas at low prices along with a favorable investment environment resulted in the buildup of excessive manufacturing capacity. But recently, a shortage of gas and monopolistic behavior has led to underutilization and greater imports. Restrictive laws put fertilizer processing and marketing in a few hands, which has also affected its efficiency. Moreover, the yield response of fertilizer has tapered off and per hectare use is fast reaching its optimal level"¹⁶⁴. The existing policy environment leads to higher costs, inefficient use, and a heavy

¹⁶³ Commerce ministry data. According to Economic Survey, import in FY 10 was 1.4 MT and 890 Thousand in 2020.

¹⁶⁴ IFPRI Discussion Paper 01516 March 2016 Pakistan's Fertilizer Sector Structure, Policies, Performance, and Impacts

burden on the government as it charges one-fourth of the market price for feedstock gas used in fertilizer manufacturing. In addition, the government imports urea and absorbs the difference in international and domestic prices.

Removing the gas subsidy and investing in agriculture research and development will result in the highest social benefit, where all major stakeholders benefit to some degree and the return to society is highest.

Vegetable ghee, 3% p.a. : The industry has grown with the population. Import of oil was 1.73 million tons in 2010. It grew to 2.94 million tons by FY 2022, 5.8% annually. 98% palm oil. Custom duty at present international price of oil is 4 to 5% per ton.

Under present policy, refining of crude palm oil has been encouraged through favourable import tariff on crude palm oil. Without a clear plan for boosting oilseeds production in Pakistan, import is bound to increase even beyond the \$ 3.56 billion in FY 22. There is opportunity to move to the related sector of animal feed. The biggest issue that government rarely mentions is the health hazard that such widespread use of palm oil poses. Thus need for increasing domestic oilseeds production.

Sugar, 3.7% p.a.: Has grown at a moderate pace. Area under cane cultivation grew from 988,000 hectares in 2011 to 1,269,000 hectares 2022, producing 88.6 million tons. It supplies cane to an estimated 90 mills that produced 5.7 million tons in FY 21. Yield per hectare grew by an average of about 11% per year in the last 11 years, though still low by world standards. According to experts, water shortages, a lack of high yielding varieties, and uneven fertilizer and pesticide applications contribute to lower yields. Many observers agree that Pakistan would benefit from additional sugarcane research and development.

Support price increased rapidly. From a uniform rate of Rs. 125/40 kg in 2011 to 325 and 450/40 Kg in Punjab and Sindh respectively. Support prices have helped increase production of sugar. A change in law by the Punjab government stipulates stringent punishment for delay in payment by mills. According to USDA, "In Pakistan, sugarcane production rises and falls in a 3-to-5-year cycle, depending on how the level of government support influences farmers' planting decisions, and on crop yields. For example, MY 2015/16 sugarcane production was 65 MMT, rising to 75 MMT in MY 2016/17 and to 83 MMT MY 2017/18, before dropping to 67 MMT and 66 MMT in MY 2018/19 and MY 2019/20, respectively". In some years, Pakistan exports sugar in small quantities.

Whether sugar production is good for the economy is a question that we must put aside, as 90 sugar mills are not going away quickly. Yet, government's muddled policies have left the sector uncertain. At various times, it has come to the rescue of the consumers, the cane producers and the mills, which has left the sector volatile and open to price fluctuations. Despite its best intention, the cost of uncertainty ultimately falls on the consumer, " Sugar prices have risen 60 percent in the last two years (March 2019 to March 2021), mainly due to government pricing policies that have kept the MSP high for producers but prices low for consumers, thereby minimizing profit for sugar mills. Sugar producers have responded by restricting domestic supply by exporting, stockpiling or price gouging on the black market. This, in turn, has prompted the government to eliminate sugar duties and import more sugar to free up supplies and control prices. Sugar in Pakistan's domestic market continues to be priced well above the international market. March 2021 sugar retail prices stood at \$637 per

metric ton, an estimated 47 percent higher than the international market pegged at \$334/metric ton" USDA. Policy flaws have meant that mills export at a price way below Pakistan prices with vast variation in quantity.

Beverages 13.3% p.a.: Food and beverage market size is poised to report strong growth rate over the forecast period due to increasing population, rising disposable incomes, coupled with changing trends. Market size in 2023 is \$ US\$14,330,000.00. Revenue is expected to show an annual growth rate (CAGR 2023-2027) of 3.08%, resulting in a projected market volume of US\$16,180,000.00 by 2027. Market penetration thus far is 4.1 %. There is room for further growth.

GoP's Strategic Trade Policy Framework 2020-2025 lists food and beverage as a priority industry. It finds mention as a priority also in the National Priority Sectors Export Strategy 2022-2027. Yet, until recently nothing was done about it. The government's especial focus on food self sufficiency and agriculture production is exemplary.

Board of Directors

Mr. Humayun Akhtar Khan, Chairman & CEO

Mr. Akbar Khan

Mr. Haroon Akhtar Khan

Mr. Ghazi Akhtar Khan

Mr. Ashraf M. Hayat, Executive Director, Company Secretary

Board of Advisors

Dr. Atta-ur-Rehman Mr. Abdullah Yousaf Lt. Gen (R) Sikander Afzal Mr. Syed Yawar Ali Mr. Tasneem Noorani Mr. Tariq Parvez Dr. Manzoor Ahmad Mr. Tariq Malik Dr. Iqrar Ahmad Khan Mr. Salman Raja Mr. Ashfaq Yousuf Tola Ms. Roshan Bharucha Mr. Hussain Haroon Dr. Abid Suleri

4- Shami Road, Lahore Cantt, Pakistan UAN:111-123-586 http://ipr.org.pk https://www.facebook.com/ipr.org.pk https://twitter.com/IPR_Pakistan

Copyright

No part of this publication may be reproduced or transmitted in any form or by any means without permission in writing from the Institute for Policy Reforms