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KEY OBJECTIVES OF INDUSTRIAL RECOVERY IN A POST WAR PERIOD: LESSONS FROM GLOBAL EXPERIENCE

Abstract. *The paper performs a multi-dimensional analysis the international experience of post war reconstruction of industrial sector. Economic recovery policies after World War II and other wars in the Western and Eastern Europe are considered, as well as those in Balkan, Asian countries, Egypt, and Israel. The research methodology includes the comparison of the initial state of industrial development and the results of industrial strategies applied to it, and allows to identify the social, political, economic, and institutional specificities of the relevant policies in the mentioned countries. Positive and negative practices of industrial reconstruction strategies and policies and their reasons are determined and summarized. Recommendations regarding avoiding counterproductive solutions and implementing successful industrial policy instruments in post war market economies are developed.*

Keywords: *economic recovery, industrial reconstruction strategy, industrial policy, Russian--Ukrainian war, international financial support*

Introduction

Years after World War II (hereafter WWII) were marked with an unprecedented speed of economic recovery along with an extremely rapid and large-scale deepening of international cooperation. The life conditions in most regions of involved countries were terrible. Governments suffered from budget deficits, trying to rebuild housing infrastructure and industrial sector, and faced significant problems with their balance of payments. Total losses from WWII amounted to about $4 trillion.

The affected countries may be divided into three categories: those that have not suffered the ravages of the war (the United States, Canada, Ireland, Sweden), those that have suffered moderate destruction (France, Italy, Great Britain), and those that have suffered significant destruction (Austria, Germany, Greece, Japan), and centralized planning economies (Czechoslovakia, GDR, Poland, USSR) (Table 1).

Table 1.
Indices of mining and manufacturing production in selected countries, 1947-1949

1937=100 %

Country	1947	1948	1949	Country	1947	1948	1949
Countries that have not suffered the ravages of war				***Centrally planned economies***			
USA	165	170	156	Czechoslovakia	83	99	107
Canada	162	169	171	German Democratic Republic	51	65	77
Ireland	117	128	139	Poland	106	146	177
Sweden	141	150	156	USSR	93	118	141
Countries that have suffered moderate destruction				***Latin America and Asia***			
France	85	100	110	Argentina	175	178	173
Italy	88	92	100	Chile	136	143	140
United Kingdom	98	110	118	Mexico	129	128	137
Countries that have suffered significant destruction				India	102	114	111
Austria	58	89	118				
Germany	33	52	78				
Greece	66	70	82	***World***	121	135	140
Japan	28	40	53	excl. USA	96	115	131

Source: [30].

Special focus should be made on Asian countries that experienced wars and military conflicts in the middle of the twentieth century (e.g. Vietnam, South Korea, Taiwan, Japan), but have become able to achieve a high level of development at the end of the century and create a cohort of “newly industrialized countries” through the implementation of consistent reforms at a certain stage of post-war reconstruction.

The preconditions from which each country began its industrial post-war reconstruction differed greatly, from the level of industrial development, its structure, and the instruments of economic policy in the pre-war period to the doctrine of revival that underlay post-war industrial policies and the ways and means of using foreign aid. Institutional factors concerning changes in the state structure and ruling forces, the new design of the economic system, and the rethinking of society's value orientations were also of great importance.

Based on the foreign countries’ experience of post-war industrial reconstruction presented below, both successful and unsuccessful approaches, measures, and tools can be noted. Their analysis will help to form an effective policy for the industrial revival of Ukraine, avoiding the mistakes made by others.

The study reviews 12 countries that have been involved in military conflicts. They are divided into such groups: Western European countries that were rebuilding after WWII; Balkan countries that experienced military conflicts in the late 20th and early 21st centuries;

Asian countries involved in WWII and other military conflicts in the 2nd half of the 20th century; Egypt and Israel as countries involved in hostilities in the African continent and in the Middle East.

The analysis is based on a wide set of academic studies, particularly that of N. Bianchi, J. Becker, T. Bogdan, M. Chiang, A. Fforde, V. Franičević and E. Kraft, D. Getz, Z. Tadmor, M. Giorcelli, V. Gligorov, M. Kaldor and L. Tsoukalis, H. Harding, S. Ivanov, M. Khan, E. Miller, A. Kuchiki, T.-C. Liu, A. Oqubay, K. Ohno, N. S. Otsubo, K. Park and H.K. Clayton, A. Petrenko, S. Sayigh, B. Schönfelder, S. Stevanović, M. Milanović, S. Milačić, N. Stojcic, S. Troschuk, M. Uvalic, V. Zamagni, and others. Despite a thorough exploration of the industrial recovery after war in the mentioned countries, there is still no cross-country generalization of the impact of government industrial policies on the success of industrial development. Ukraine is new to a war of such scale in the current century. The outcomes of the study will bring a new vision on how Ukrainian mining and manufacturing should function in a post-war period.

The purpose of this paper is to conduct a comprehensive analysis of international experience of post-war reconstruction of the industrial sector, define successful and negative practices of industrial reconstruction strategies and development of recommendations regarding avoiding counterproductive solutions and utilising successful industrial policy instruments for post-war economic recovery of Ukraine.

1. The policies for industrial recovery in Western European countries after WWII

As a result of World War II, France, Germany, and Italy suffered varying extent of destruction of their industrial infrastructure. The war exacerbated economic problems in these countries, which started back in the 1930s as a result of the global crisis. However, the countries' reactions to the impact of the combination of economic, political and military factors were constructive, allowing even those of them who were paying reparations to restore and to restructure their industrial sectors. The Marshall Plan aid played an important role, although an academic debate on the issue still lingers.

In addition to the Marshall Plan, national recovery programs have been developed and have been implemented with varying degrees of success, however countries have generally achieved synergic effect from the combination. Besides policies aimed at industrial reforms a great role in the revival of the industrial sector belonged to a set of measures to ensure macroeconomic stability – monetary, fiscal, and financial.

A more detailed description of the industrial recovery programs, the instruments of their implementation, positive results and shortcomings is presented in Table 2.

Table 2.

Programs of industrial renovation after World War II in Western European countries and their results

Country	Key preconditions	Recovery programs and their content
Italy	· Significant destruction of civil and industrial infrastructure · GDP fell to the level of poor countries (output was 30% of its prewar level) · High unemployment rate (2 million people) · Currency stability · Access to cheap raw materials (including a newly discovered natural gas field) · Cheap labor force · Large package of orders during the Korean War (1950-1953).	· "The Marshall Plan" (equipment and goods) · Program of "Reconstruction" 1945-1947, implemented by IRI (Institute for Industrial Reconstruction), promoted the development of a "mixed" system of state enterprises based on a combination of state and private capital · Attracting investment by issuing shares of industrial giants · Technical and technological modernization of industrial enterprises · Free trade policy · Development of road and transport infrastructure (highways) · Foundation of the Southern Development Fund (1950), since 1957 it has invested in industrial development · Loans, tax incentives for private investors · Inadequate support for SMEs
	Results of program implementation	
	Positive results: · The restoration in 1948 of the pre-war level of production ensured an accelerated growth rate of 8% over the next 10 years · Rapid growth of industrial exports by giant enterprises · Full employment achieved · Investments reached 1/3 of GDP (1963)	**Blunders:** · Worsening regional economic disparities between the north and south of the country · Significant environmental impacts due to irrational location of industrial facilities
France	**Key preconditions**	**Recovery programs and their content**
	· GDP drop by 25% · Reduction of industrial production by 60% · Damage to 195,500 industrial plants, including all shipbuilding facilities, power plants, 80% of oil refining · 200,000 military personnel and 400,000 civilians died, and hundreds of thousands of citizens were deported · The economy functioned at the expense of the financial sector, and the industrial potential of the pre-war period was not properly used	· "The Marshall Plan" · The Dirigiste model of economy · Indicative planning (until the end of the 1960s, active regulatory role) · Implementation of medium-term national plans for modernization and development of the national economy (1947-1952 – development of the public sector; 1954-1957, 1958-1961 – support of the competitiveness of private firms) · Instruments: long-term preferential loans, mechanism of reduced tariffs and prices for government goods and services
	Results of program implementation	
	Positive results: · During 1952-1958 industrial production grew by 52% · Rapid renewal of fixed capital · High labor productivity	**Blunders:** · The Marshall Plan funds were directed to the revenue side of the budget and spent primarily on current needs rather than invested. · Increased public sector share in industry (97% of coal production, 95% of gas production, 80% of electricity and aircraft production, 40% of the automobile industry)

		· Rising unemployment in the 1960s (due to extreme over-regulation and inadequate increases in the minimum wage)
Germany	**Key preconditions**	**Recovery programs and their content**
	· Large national debt · Hyperinflation · Two-thirds drop in industrial production · High unemployment · Significant pre-war industrial investments · Economic reforms to develop a "social market economy" under one team of politicians (ideologist L. Erhard) until 1966, which ensured consistency of reforms	· 60% of the Marshall Plan financing went to special funds investing in industrial technical and technological renewal · Tax incentives for exporters, accelerated depreciation, reduction of the tax base by the amount of investment · Monetary reform, which leaded to stabilization of domestic demand and increasing of competition among producers · Demonopolization and development of small and medium-sized businesses · Creation of the European Payment Union (expansion of trade relations) · Germany's export expansion due to political pressure from the United States
	Results of program implementation	
	Positive results: · Even with negative cash flow under the Marshall Plan and reparations paid ($3.12 bln in receipts versus $3.4 bln in reparations paid), Germany was able to quickly rebuild industry and become the world's third largest industrial producer after the United States and Great Britain · Dynamic development of the food, textile, machine building, automobile and electrical industries (industrial production index of 180% in 1956 compared with 1936) · Since 1951, Germany became a net exporter, supplying the revival of other European practice	**Blunders:** · The increasing level of concentration in heavy industry during the 1950s and 1960s (coal, chemical, aircraft, and metallurgical industries), which subsequently caused significant regional disparities in economic development

Source: authors' development based on [3; 13; 20; 22; 23].

The U.S.-led European Recovery Program (the so-called "Marshall Plan") became an important, and for some countries a key instrument for financing economic and political transformation in postwar Europe. U.S. aid came in various forms: non-refundable in US dollars, commodity products, but most of it in the form of loans.

From April 3, 1948, to June 30, 1951, the total amount of Marshall Plan funds was about $17 bln. The distribution was made according to each country's balance of payments deficit. Four countries received two-thirds of entire amount of aid: Great Britain (25%), France (20%), Germany (10%), and Italy (10%).

The program in general contributed to the revival of global trade relations and the formation of European unity, as well as allied relations with the United States. The Marshall Plan influenced the contours of military and political events in the late 1940s and early 1950s, including the decolonization processes in France, the Netherlands, and Belgium, which had a negative impact on their economies, and the Korean War, which provided military-industrial orders to some European countries and raised the issue of rearmament in West Germany.

At the same time, the National Programs were responsible for most of the progress of the industrial revival. Each country has built a strong industrial capacity in its own way: France through state-monopolistic capitalism, Germany through demonopolization, development of SMEs and stimulation of the competitive mechanism, Italy through the development of public-private partnerships.

The advantage of implemented programmes of industrial recovery relates to the emphasis on restructuring and technical and technological modernization of industrial enterprises, the development of medium- and high-tech industries, a solid base for R&D and technology transfer infrastructure. Also, projects for the development of road and transport infrastructure to ensure the logistics of manufactured products played a great role.

Most national programs have faced the problem of rising unemployment due to unbalanced social policies, particularly in the area of minimum wage regulation and trade union activity. Countries that bet on current market needs (e.g., Belgium) had rapid but short--term growth, in future suffered from deindustrialization due to technology and equipment obsolescence, as well as structural changes in demand in foreign markets.

2. Industrial recovery in the Balkan states that experienced military conflicts in the late 20th and early 21st centuries

The wars in the Balkans in the 1990s led to significant destruction and economic damage (estimated at tens of billions of dollars), loss of production capacity and human resources in the participating countries. Since the end of hostilities, the states of the region have undergone fundamental and multiple transformations, related both to the transition to a free market and European integration and to ethno-political and cultural changes.

The experience of explored countries – Bosnia and Herzegovina, Serbia and Croatia – demonstrates how the incompleteness of institutional reforms, the weak involvement of the state in management of industrial sphere and the complete reliance on international support over two decades led to deindustrialization and related economic consequences for foreign trade, the state of public finances, the labor market and the pace of European integration.

A detailed description of the situation in industrial sector of these countries at the end of hostilities, the implemented programs for post-war reconstruction and their instruments, as well as the results are presented in Table 3.

Table 3.

Programs of industrial recovery in Balkan states and their consequences

Country	Key preconditions	Recovery programs and their content
Bosnia and Herze-govina	· Breakup of Yugoslavia, civil wars · Significant damage to buildings and physical infrastructure · Significant losses of human capital (1.8 million internally displaced persons, over 100,000 deaths (2.3% of the total population) · The largest total losses among belligerent countries of $50-70 billion, not comparable to the country's GDP ($3.6 billion) · The Dayton Agreement in 1995, which committed the World Bank and the EBRD to developing a reconstruction program for the country	· Active participation of international organizations in postwar reconstruction (World Bank, EBRD, later the EU), on the basis of which 11 tactical groups were created to develop a program of economic reconstruction · Funding of $5 billion (1996-1999), 82% of which was grants and irrevocable financial aid · Sectoral support – transportation, energy, agriculture and environmental protection, rehabilitation of basic infrastructure · Funding for the revival of the industrial sector – 3% of all international donors' receipts · Stabilization Plan and Standard EU Pre-Accession Package (1999)
	Results of program implementation	
	Positive results: · Partial restoration of physical infrastructure · Progress in waste management	**Blunders:** · Lack of government autonomy in decision-making · Limited resources for recovery · Lack of capital investment in post-war reconstruction (60% of structures could not be rebuilt before this time) · Lack of focus on the industrial sector, which had a negative impact on employment and the level of domestic investment and savings · Growth of the shadow economy
	Key preconditions	**Recovery programs and their content**
Serbia	· Secession of territories (Bosnia, Croatia, Republic of Kosovo) · International isolation of the country, trade blockade and other sanctions imposed on Serbia · Huge military expenditures · Significant influx of refugees · Physical destruction of industrial facilities and a 70% drop in industrial production, rising unemployment and hyperinflation · Low level of savings in the economy (12-14% of GDP) · Nationalization and support of loss-making enterprises in the 1990s.	· "Catch-up" and "imitation" modernization of the country's economy, the implementation of the provisions of the Washington Consensus · Economic recovery program (2000), which included "recipes" for transition to the market; liberalization of prices and foreign trade, privatization of companies and banks, attraction of private investment in production with a high export quota, implementation of large infrastructure projects · Financial and technical assistance from international organizations and other countries · Competition Law (2005) · Restructuring of 550 state-owned enterprises (since 2006) and sale of loss-making enterprises to foreign investors
	Results of program implementation	
	Positive results: · Low-base effect: industry growth rate since the mid-2000s – 5% per year (manufacturing), 6.5% per year (mining) · High rates of economic growth in 2000-2008	**Blunders:** · Deindustrialization (10% decrease in the share of industry in GDP from 1995 to 2005) · Dependence of industrial production on the foreign economic situation · Increase of unemployment · Predominant investment in services (banks, telecommunications, real estate, trade) · Lack of support for the technological modernization of industrial enterprises · Ineffective antimonopoly legislation and institutions
	Key preconditions	**Recovery programs and their content**
Croatia	· Independence in 1991 and war with Yugoslavia (1991-1995)	· Stabilization program of 1994-1995, aimed at overcoming inflation (by revising the prices of

	· Losses from military actions and destruction of $37.1 billion · Closure or damage to industrial plants in the wood, metal, and textile industries · Implementation of market reforms and the economic crisis of the early 1990s (industrial production fell by 43.2% in 1993 compared with 1990) · Surplus workers in state-owned companies, deindustrialization, and loss of markets	products of state-owned enterprises and freezing wages in the public sector, the policy of credit restraint and currency market liberalization), the introduction of the kuna · State investment in the economy (5-7% of budget expenditures in 1995), in the 2000s – significant investment in road and transport infrastructure · Reforms in the banking, financial and monetary sectors since the 2000s · Expansion of international trade (accession to the WTO in 2000, Association Agreement with the EU in 2001) · Privatization of state enterprises · Increasing central bank reserves to raise the confidence of the international financial community
	Results of program implementation	
	Positive results: · The decline in unemployment in 1996-1997 · Economic growth of 6% annually (until 1998) · Improvement of the state's logistics infrastructure in the 2000s · EU accession in 2013 · Exit from recession in 2015	**Blunders:** · Lack of incentives for private investment in economic renewal (0.5% of GDP in 1995), insufficient public investment · Losses of human capital due to migration (350,000 people in 1991-2001) · Weak innovation and scientific potential, extensive growth, low resource productivity · Limited complexity of the country's export basket due to the prevalence of low- and medium-tech industries, lack of logistics infrastructure compared to other EU countries · Low efficiency of state institutions in the formation and implementation of industrial policy · Large share of the public sector in the food, pharmaceuticals, and utilities sectors

Source: authors' development based on [4; 6; 8; 10; 21; 25; 26; 27; 28; 29; 31].

The war in the Balkans, followed by the transition to a market economy, stalled the progress of market reforms and stretched the transition process for decades (as of 2017 the World Bank estimated the state of market transformation in the Western Balkans at 1996 levels in the small transformational economies of Eastern Europe (7STEEs[1]). Ukraine is also characterized by incomplete institutional transformations toward a market economy, but we can assume that the war with Russia may become a catalyst for these reforms.

The lack of state policy measures aimed at increasing the diversification of the industrial sector through medium- and high-tech industries, the preservation of monospecialization (in Croatia – tourism, in Serbia – automotive industry) were among the main barriers hindering industrial development in the Balkans. This increased the dependence of the economies on external economic determinants. Consequently, the economies of these

[1] The World Bank classifies seven countries as small transformation economies of Eastern Europe (7STEEs) Bulgaria, Croatia, Estonia, Latvia, Lithuania, Slovakia and Slovenia.

countries have not formed an internal investment resource and provision of long-term support for economic growth.

3. The policy of postwar industrial modernization in Asian countries in the second half of the 20th century

Most Asian countries made revolutionary transformations in the industrial sector after WWII and achieved extraordinary rates of economic growth as early as the 1980s and until the Asian crisis of 1997. Involvement in wars and political conflicts in the 1940-1970s as well as the global oil crisis hindered the processes of industrial renewal and modernization. However, trade liberalization (after a period of “cultivation” and protection of new industries and enterprises), openness to foreign direct investment (which came on favorable terms for countries) and the significant role of the state helped the economies of the “Asian miracle”.

Among these countries this was Japan that has been able to increase investment in civilian industries thanks to military cost reductions and the Marshall Plan. Other Asian countries, which had gone through periods of super-fast “catch-up” development and finally turned into “new industrial economies” with the support of Japan, the United States and international organizations, moved to industrial modernization in the last decades of the twentieth century.

The industrial policy, which ensured the "Japanese economic miracle," was implemented in several stages (see Table 4).

Table 4.
Industrial policy of postwar recovery in Japan

Policy characteristics	**I stage (1945-1950)**	**II stage (1950-1960)**	**III stage (1960-1970)**	**IV stage (1970-)**
Policy orientation	Priority production	Production rationalization	Public-private coordination	Long-range planning
System of regulation	Direct control	Indirect control	Liberalization	Liberalization
Measures	· Material allocation · Recovery financing · Price-support subsidies · Price control · Rationing of imported materials	· Financing · Tax incentives	· Investment and production coordination · Price coordination · Merger and reorganization · Promotion of machine and electronics industries	Deliberation councils
Key industries	· Coal · Iron and steel	· Iron and steel · Power · Marine transport	· Iron and steel · Petrochemicals · Oil refineries · Synthetic fibers · Machines and electronics	High technology

Source: [15].

Before the war, Japan was dynamically developing and modernizing various spheres of life, including industrial production, with all the signs of "catching up" the United States and Great Britain. The defeat in WWII set the economy back: in 1945 per capita GDP was only 47% of the 1940 level. The Yoshida Doctrine (a set of economic reconstructions and development of the country as a nation, its main goal was to save on military expenditures) and then Income Doubling Plan by Hayato Ikeda significantly contributed to the revival of industry [18]. During the period of post-war recovery, the average annual growth rate of the economy was 7.1%, which made it possible to return to the pre-war trajectory of catch-up development.

Until the 1960s, industrial policy had a pronounced sectoral character and was focused on technical and technological modernization. The Business Rationalization Promotion Act (1952) introduced a special depreciation scheme for equipment. Later industrial policy shifted to private sector coordination and liberalization. Beginning in the 1970s, the promotion of high-tech industries (machine building and electronics) also became a priority.

The transfer of advanced technology from developed countries has become a powerful source of growth. From 1950 to 1971, 15,000 patents and licenses (mostly American) were acquired. In traditional industries a transition from the production of innovative products took place: in the chemical industry to "fine" chemicals, in the ceramic industry to "fine" ceramics; the textile industry entered the global fashion industry.

Trust between the government and society, the establishment of financial development institutions (Development Bank of Japan, Export-Import Bank of Japan, and Japan Finance Corporation for Small and Medium Enterprise (JASME)), the dissolution of the zaibatsu, and the establishment of competition all contributed to the success of the industrial recovery plans.

In Ukraine, the lack of its own development institutions (development banks) and the credit dysfunctionality of the banking system may be one of the factors delaying the industrial revival, and reliance on external resources, as the experience of other countries has shown, cannot provide long-term effects.

Vietnam, Taiwan, and South Korea entered the recovery phase from different starting points. There was massive destruction of physical infrastructure in Vietnam and Taiwan. Vietnam had already had some success in developing its infrastructure and industrial complex, while in Taiwan agrarian production prevailed. All countries suffered from the depletion of resources and the loss of a large part of the population. Most countries experienced a long period of military and political instability. Under these conditions, the real post-war recovery began in most countries only from the 1960s-1990s.

The main elements of the "Asian model" of the industrial revival were:

1) deregulation of foreign investments;
2) preferential tax regimes and other tax incentives;
3) construction of industrial parks;
4) allocation and support of specific sectors (high-tech production, industrial diversification).

Foreign direct investment proved to be very sensitive and grew rapidly in response to these measures, causing favorable effects on exports, employment and economic growth.

Industrial policy during the 1960s-1990s combined or alternated strategies of import substitution (mainly in the early stages of post-war recovery) and export orientation (see Table 5).

Table 5.

Export-oriented (EO) and import-substituting (IS) industrial policy in Asian countries

Country	1960-1969	1970-1979	1980-1995
Vietnam	***First phase of IS:*** Device engineering, machine building	***EO:*** Free economic zones (1979)	***EO:*** Industrial parks (1991-1995) Export-processing zones (1991)
Taiwan	***EO:*** Kaohsiung (1965) Spinning Export-processing zones	***Second phase of IS:*** Heavy / chemical industrialization (1976) ***EO:*** Investment Encouragement Ordinance (1970)	***EO:*** Development of capital-and technology-intensive industries as well as small-and medium-sized enterprises for export (Encouragement for introduction of foreign investments specific industries)
Republic of Korea	***First phase of IS:*** Consumer goods (sugar, fertilizer, spinning, cement, and others) (1962) ***Second phase of IS:*** Intermediate goods ***EO:*** Consumer goods	***Second phase of IS:*** Heavy / chemical industries (1972)	***EO:*** Maturing period “Three Lows” economic boom: low interest rate, low oil price, dollar devaluation), export growth (1986-1989)

Source: [2; 5; 7; 12; 15; 16; 19].

Thus, the contours of the policy of industrial revival in East Asia were conditioned, on the one hand, by sectoral influence for the industry diversification, and, on the other hand, by the liberalization of trade through the special economic zones. In general, the experience of the post-war recovery of these countries allows us to highlight the following features:

1. Most ASEAN countries have successfully used export processing zones by offering preferential terms and conditions to attract foreign investment. However, the Asian crisis of 1997 revealed the shortcomings of this instrument, in particular, the need to constantly improve the quality of human resources.
2. Foreign direct investment has played a critical role in achieving the goals of East Asia's industrial development strategy by promoting international competitiveness. Industrial policy does not necessarily have to be geared towards strong protection of industries; it can take advantage of attracting foreign capital.
3. The globalization of the economy has shown significant advantages of the open market and trade liberalization, to which most Asian countries turned in their economic policies in the late 20th and early 21st centuries.
4. Strengthening international competitiveness is impossible without the development of a high-tech sector and an increase in the gross value added of industry.
5. The constant improvement of the quality of human capital, the involvement of skilled labor in industrial production provides long-term advantages in international trade.
6. Central governments played a crucial role in East-Asian countries' strategies regarding industrial development and growth.

4. Israel and Egypt: two different approaches of industrial policy in wartime and during armed conflicts

The experience of industrial reconstruction policies of countries that have been and continue to be involved in wars and armed conflicts can be useful in shaping a plan for post-war economic reconstruction in a scenario of transition from the active phase of war to the passive – periodic short-term attacks by an aggressor country with destruction of military, civil and industrial infrastructure. In particular, these are Israel and Egypt.

Israel spends from 6 to 16% of GDP annually on military needs. This money could be used for sustainable development, reducing the carbon footprint, and improving the well-being of citizens. Should Ukraine find itself in a situation of permanent military conflict with an aggressor, the industry could be reoriented to meet permanent military and related needs. Israel had to develop a military-industrial complex, which includes the entire production cycle – from R&D to final production. At the same time, over the period 1960-2020, Israel's GDP increased 17-fold[2].

Egypt has a business climate more similar to Ukraine, including a significant level of corruption and the shadow economy, the primary stage of digitalization of the state and the economy, and deindustrialization. The country suffered from military-political and social instability during the II half of the 20th century, including the recent revolution of 2011, the bloody wars of 2011-2013, and their dire consequences for the economy. At the same time, the Egyptian industry attracts investors because of the large domestic market and favorable geographical location. Rather, Egypt is an example of a country that has significant industrial potential but has not been able to realize it fully due to the weak promotion of reforms, a lack of political will and progressive vision of the economic development model.

Details on postwar economic recovery in the countries are presented in Table 6.

Table 6.
Programs of postwar industrial recovery in Israel and Egypt

Country	Key preconditions	Recovery programs and their content
Israel	· Participation in wars during decades · The intermittency of allied arms deliveries · Well-developed R&D and innovation infrastructure · Extensive development until the 1980s. · The German reparations paid in 1953-1965 became a primary capital for industrial development · Significant influx of human capital due to the migration of highly qualified specialists from the former Soviet Union	· Since the 1980s, the implementation of the free market doctrine, which is based on the economics of innovation. · Strengthening the image in the international arena (accession to the OECD in 2010), which contributed to investments inflow · Trade liberalization by reducing customs duties, adopting international standards, and improving the domestic legal environment for business · Establishing scientific cooperation with the EU (EU Seventh Framework Program (2007-2013), Horizon 2020) · Many programs to stimulate innovative development, the high-tech sector (as a direction of export orientation), the development of an ecosystem for technological transfer · System of state grants and other financial incentives for R&D, protectionism towards high-tech sectors
	Results of program implementation	
	Positive results: · High combat effectiveness of the country, development of high-tech weapons · World leadership in exports of aviation equipment and drones, electronics and communications technology · Significant volumes of investment in the economy	**Blunders:** · Most of the industrial production is still in low-tech sectors · Low labor productivity in traditional industries

[2] The World Bank. 2022. Retrieved from: https://data.worldbank.org/indicator

	Key preconditions	Recovery programs and their content
Egypt	· Lack of an established development model; the key sectors are tourism and commodity production · Uneven economic growth before the 2011 revolution, its concentration in capital-intensive industries that did not create jobs · High share of the informal economy (up to ⅔ GDP) · Rapid population growth and high levels of poverty (25% in 2010) · Militarization of industrial production	· Implementation in 2016 of the Economic Reform Programme (ERP), which was based on the "big push" theory and provided for the implementation of national megaprojects as the key to economic growth. · Attracting external borrowings to cover the costs of macroeconomic stabilization (IMF, external government bonds, loans from Arab countries) · Country Partnership Framework (CPF) with the World Bank to improve the governance of reforms · Reform of the taxation system (introduction of capital gains tax and value added tax)
	Results of program implementation	
	Positive results: · A number of large projects that could provide multiplier effects in the economy in the future has been launched: the construction of a nuclear power plant (2017), the development of New Cairo, the New Suez Canal and the construction of a new industrial zone (investment volume $80 bln) · Raising the country's credit rating · Accelerating the development of construction and manufacturing	**Blunders:** · Rising external debt and high inflation · High rates of unemployment · The dominance of large private companies over small and medium-sized ones, which are more of a shadow business · Profitability, inefficiency and high dependence on imports of enterprises of the military-industrial complex · Lack of structural reforms · Chronic underinvestment in R&D and new technologies (0.6% of GDP in 2019)

Source: authors' development based on [1; 9; 11; 14; 17; 24; 32].

Comparing Egypt with Israel a large technological gap can be observed. Countries faced with military aggression move in their industrial development with different speed and in different directions, and results of post-war reconstruction are dramatically different: Israel is successful, Egypt is not. The development of scientific and innovative potential has become one of the key factors of Israel's successful industrial development, and the innovation ecosystem created, despite the militarization of industrial production, allows the active conversion of military technologies into civilian ones. The reason for the slowdown of economic reforms in Egypt is the institutional "traps" of the economic system, which the state cannot overcome even with the active participation of international organizations.

Conclusion

The results of analysis of postwar industrial recovery experience demonstrates the multiplicity of approaches, applicable in specific historical periods and designed for the development of a particular economic system. Overall, it identifies the key points that should be considered in shaping a strategy for postwar reconstruction:

1. To control rapid foreign and domestic borrowing, which could adversely affect industrial exports through the mechanism of revaluation of the national currency. And to take an active part in determining the directions of their use.
2. To take into account the limited and slow flow of foreign investment in weak sectors, in particular in a high-risk business environment.
3. To improve permanently the institutional capacity of public institutions in the shaping strategic guidelines for industrial recovery, industrial policy and the preparation of plans for their implementation. To achieve at least partial autonomy in selection of directions and structure of financing of industrial reconstruction. It also requires expanding the role of such institutions as National Council on Recovery of Ukraine (created in April 2022), establishing institutions in the field of strategic industrial planning and ensuring the formation and implementation of institutional mechanisms of industrial recovery strategic plans realization.
4. To intensify the state intervention at the initial stages of industrial recovery (protection of new industries, creating additional incentives for investors and businesses). At the same time, the expansion of the public sector should be prevented.
5. Most countries were engaged in international trade agreements and have liberalized foreign trade after the "growing" phase of competitive industries. Ukraine has already joined a number of international treaties that impose restrictions on public aid to industrial enterprises. In this case, steps should be taken regarding the suspension of these conditions and the achievement of favorable conditions in international trade. Effectively this opportunity can be realized only with highly qualified and unbiased governance in the allocation of stimulating resources based on transparent criteria, as it was in Japan, Korea, Taiwan.
6. The creation of national giants – large industrial enterprises or infrastructure projects – had limited effectiveness in the short term. France was the most successful in this direction. So, support for growth should be based primarily on the stimulation of small and medium-sized businesses. Large industrial enterprises play a more significant role in a strategic partnership with foreign companies (through increased penetration into global markets).
7. Priorities for industrial restructuring should be formed taking into account the analysis of global market dynamics and technological foresight, following the

example of advanced Asian economies. This will help form the basis for long-term economic growth.

8. To ensure reasonable allocation of industrial objects through regions according to Euro integration priorities of national economic development.

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