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The Dutch disease and the Turkish experience

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Highlights

- The study reinterprets the Turkish growth experience since 2000 within the Dutch disease literature, asking whether capital inflows, construction and tourism can replicate natural-resource boom mechanisms.

- It constructs a single-country Dutch Disease Index (DDI, 2020=100) that aggregates real effective exchange rate (REER) movements, resource-rent proxies, export composition and net-export dynamics to track Dutch disease pressures over 2000-2024.

- Time-series models, including HAC-robust OLS, first-difference specifications and ARDL(1,1,1,1) with crisis dummies, relate the DDI to foreign investments, construction and tourism receipts to identify their contributions.

- The results show persistent DDI dynamics and a robust positive association of construction and tourism intensity with Dutch disease pressures, while capital inflows alone provide only a weak explanation for REER behaviour.

- Together, the findings support a capital inflow driven, construction and tourism amplified Dutch disease variant for Türkiye, and motivate policies that limit sustained overvaluation and reinforce tradables capability and export diversification.

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ABSTRACT

This paper examines whether Türkiye exhibits Dutch disease-like dynamics in the absence of a natural resource boom. Using annual macroeconomic and sectoral data for 2000-2024, we construct and interrogate a Dutch Disease Index that aggregates real effective exchange rate appreciation, resource dependence proxies, export composition, and net export pressures. Time series estimations relate the index to capital inflows, construction intensity and tourism receipts. The evidence does not indicate a textbook Dutch disease, but sustained Turkish Lira overvaluation, erosion of manufacturing competitiveness, and a disproportionate expansion of construction and services are consistent with Dutch disease-like symptoms. These findings underscore the need for policies that limit persistent overvaluation and support tradables capability through export diversification, innovation, and investment in productivity-enhancing infrastructure.

1. INTRODUCTION

The Dutch disease, an economic phenomenon characterized by the negative impact of a booming sector such as natural resources on a country's broader economy, has been a subject of considerable academic inquiry. The concept of Dutch disease[1] originates from the economic crisis in the Netherlands in the 1960s following the discovery of natural gas, which induced an appreciation of the Dutch guilder and a decline in manufacturing exports ("The Dutch Disease", 1977; Corden & Neary, 1982; Gelb, 1988). While typically associated with natural resource booms, the concept can extend to capital inflows and other foreign earnings.

In the Dutch disease literature, the Turkish case is debated. One strand argues that rapid construction-led expansion and fiscally supported domestic demand reallocated resources toward non-tradables and undermined tradable manufacturing especially in the 2002-2008 period (Erol & Unal, 2015; Acemoglu & Ucer, 2015). A second strand emphasizes demand side pressures from tourism receipts and broader foreign capital inflows that appreciate the real exchange rate, ease credit constraints through wealth and collateral effects in real estate, and compress profitability in tradable manufacturing by raising economy-wide wages and non-tradable input costs (Ojaghlou, 2019; Yépez, 2021; Özatay, 2016). A third, more skeptical view holds that Türkiye's experience is better described as premature deindustrialization, driven by currency overvaluation and globalization dynamics rather than Dutch disease in the strict, resource boom sense (Siklar & Tonus, 2007; Rodrik, 2016).

Although Türkiye is not a major natural resource exporter, the study explores alternative triggers. Under standard Dutch disease theory, the key issue is the transmission mechanism, not a single trigger: a positive income shock from resource discoveries, capital inflows, or policy-driven demand can appreciate the real effective exchange rate (REER), reallocate labor and capital toward non-tradables such as construction and tourism, and reduce the competitiveness of tradable manufacturing (Corden & Neary, 1982; van Wijnbergen, 1984; Frankel, 2012). Therefore, dismissing a Dutch disease interpretation of Türkiye's construction-led expansion simply because it did not follow a discrete resource discovery is misguided. Accordingly, throughout the paper the term booming source is defined broadly as any sustained surge in foreign currency availability, including portfolio inflows, FDI, tourism receipts, remittances, and credit financed demand booms

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[1] The term itself was popularized by The Economist in 1977, and later formalized in the academic literature ("The Dutch Disease", 1977; Corden & Neary, 1982; Gelb, 1988).

that generate appreciation pressure. The classic Dutch disease case of a natural resource windfall is one special case within this broader mechanism based definition.

To avoid confusion, this paper uses Dutch disease as a transmission mechanism framework rather than as a label reserved for hydrocarbon discoveries. In Türkiye's case, foreign capital inflows and other foreign currency earning receipts are treated as the boom, REER appreciation and volatility are the proximate relative price outcomes, and the Dutch disease lens organizes how these drivers translate into spending and resource movement channels, sectoral reallocation toward non tradables, and weakening tradables performance. A purely capital inflows and REER appreciation narrative identifies key inputs, whereas the Dutch disease framework provides the mechanism based mapping from inputs to sectoral outcomes, which is the core contribution of this study.

This study evaluates the presence of Dutch disease in Türkiye during the last couple of decades, a period characterized by persistent growth. (World Bank, 2025). Identifying the structure of this growth and investigating its fundamental relationship with the Dutch disease and to examine whether Türkiye has experienced Dutch disease in the past or present is targeted. Given the single country annual sample, the empirical section is intentionally parsimonious and diagnostic. It triangulates the mechanism narrative using a transparent index based approach and simple time series specifications, so the claims are framed as structured evidence consistent with the proposed channels rather than as a large sample causal design.

This paper contributes in four ways. First, it reframes Dutch disease as a mechanism based diagnostic for externally financed, non-commodity booms, which fits Türkiye's post-2000 construction-led expansion. Second, it operationalizes these mechanisms into a transparent Dutch Disease Index that combines relative price dynamics, tradables performance, and sectoral reallocation signals for 2000-2024 period. Third, it provides a unified narrative and empirical triangulation that connects capital inflows and foreign currency earning receipts to REER appreciation pressure, non tradables expansion, and weaker net exports, aligning these patterns with spending and resource movement channels. Fourth, it offers a periodized Türkiye case interpretation that can be compared to other emerging economies experiencing non commodity booms, making the framework portable beyond the single country context.

In the next part, the study defines the Dutch disease in the general sense, and it is followed by a section that focuses on the important aspects of the Turkish economy in the last two decades from a Dutch disease perspective. The potential existence of the Dutch disease in Türkiye is measured in the next section through a series of analyses that are well accepted in the literature. Finally, the results of the analyses are discussed along with policy implications in the conclusion section.

2. THE DUTCH DISEASE

Dutch disease refers to the reallocation and relative price dynamics that follow a large positive sectoral shock. When a country experiences a sudden expansion in a booming sector, classically a resource discovery followed by exploitation, labor and capital are drawn toward that activity. The resource revenues are typically channaled internally. As a result, the demand for non-tradables and therefore their prices would increase, while higher prices in turn appreciate the REER. These mechanisms reduce the relative profitability of tradable manufacturing, raise input costs outside the booming sector, and compress domestic production in those industries. Exports of manufactures tend to weaken and import dependence rises; the initial surge in income may therefore give way to slower growth, especially when fiscal and financial policies amplify demand pressures and capacity constraints. A stylized example is an oil importing economy that discovers large reserves, redirects production factors to extraction and processing, and then faces tighter labor and capital conditions in manufacturing alongside real appreciation, lower non-resource exports, and higher inflation as demand outstrips supply (Corden & Neary, 1982; van Wijnbergen, 1984; Sachs & Warner, 2001; Frankel, 2012).

The phenomenon of Dutch disease mechanism in an economy typically unfolds in a predictable sequence if left unaddressed. It begins when abundant, exploitable resource reserves coincide with favorable world prices and demand, generating large export revenues. As resource exports begin to dominate the export sector, the economy becomes increasingly reliant on these commodities as the primary source of growth and fiscal revenue. The resulting foreign exchange (FX) inflows raise demand for the domestic currency, appreciate it, and increase the REER. Real appreciation weakens the competitiveness of non-resource tradables, compresses their exports, and shifts activity toward the booming sector, which deepens dependence on resource rents.

The Dutch disease typically operates through two principal mechanisms as "the spending effect" and "the resource movement effect". The spending effect results from resource windfalls increase

aggregate demand for non-tradables, leading to REER appreciation. By contrast, the resource movement effect takes place when labor and capital are reallocated toward the booming natural resource sector, reducing the relative competitiveness of other tradable industries (Corden & Neary, 1982). In Corden and Neary's (1982) critical framework, an expansion in extractive industries such as oil, gas, or mining induces REER appreciation through both channels. For instance, inflows of oil revenues often lead to currency appreciation by attracting resources to booming sectors (the resource movement effect) while simultaneously driving demand for non-tradables as incomes rise (the spending effect). The result is frequently a contraction in other tradable sectors, particularly manufacturing and agriculture, which are extremely sensitive to international price competitiveness. This contraction is reflected in declining output, employment, and long-term diversification capacity.

In mechanism terms, the necessary condition is a sustained increase in foreign currency availability that lifts domestic absorption and places appreciation pressure on the REER. In this broader setting, the booming source may be net capital inflows, aid, remittances, tourism receipts, or other foreign earnings, which relax the external financing constraint and raise demand for non-tradables. This replicates the spending effect even when the commodity export channel is absent (Corden & Neary, 1982; Corden, 1984; Frankel, 2012; Magud & Sosa, 2010).

A resource movement type mechanism can also emerge without an extractive sector. As relative prices and expected returns shift toward non-tradables, labor and capital are drawn into construction, real estate, and domestically oriented services, while tradables profitability is compressed through higher wages, higher non-tradable input costs, and REER appreciation. The predicted symptoms include a relative shift in value added and employment toward non-tradables, weaker net exports, and diminished manufacturing competitiveness (Krugman, 1987; Torvik, 2001; Rodrik, 2008, 2016).

This generalized interpretation is the one adopted in this study. The empirical sections therefore examine whether Türkiye's externally financed booms, proxied by capital inflows and foreign earnings such as tourism receipts, are associated with a pattern of REER movements and sectoral reallocation consistent with the spending and resource movement channels described above.

Theoretical refinements have further emphasized the broader macroeconomic implications of Dutch disease. The spending effect, while boosting consumption and services, can also fuel inflationary pressures. Higher resource revenues increase domestic demand for non-tradables, raising their prices; these wage and price increases often spill over into the wider economy, thereby eroding real income gains and reducing the profitability of resource rents (Corden & Neary, 1982). The spending effect arises when inflows raise domestic demand for non-tradables and appreciate the REER, which compresses profitability in tradable sectors. Similarly, the resource movement effect exacerbates structural imbalances as the reallocation of capital and labor lowers productivity in non-resource tradables. Supply shortages in these sectors raise their prices, once again generating inflationary pressures and reducing external competitiveness (Corden & Neary, 1982; Brahmbhatt, Canuto, & Vostroknutova, 2010).

Additionally, natural resource receipts typically increase demand for the local currency, leading to an appreciation. Currency appreciation reduces the international competitiveness of non-resource tradable sectors by raising foreign prices of domestic goods, and compressing the export volume in manufacturing and agricultural exports (Corden & Neary, 1982). The strengthened currency also incentivizes greater reliance on resource exports. Moreover, the appreciation lowers the relative price of imports, making foreign goods cheaper, which further erodes the viability of domestic tradable industries (van Wijnbergen, 1984).

Meanwhile the non-tradable sector which includes construction, retail and services usually benefits and expands as revenues from resources circulate through the domestic economy. This induces labor and capital to shift to the non-tradables, where wages and returns are higher, fueling growth in that sector (Corden & Neary, 1982; van Wijnbergen, 1984). On the other hand, the resource sector's high returns and wage offerings intensify this shift by attracting labor and investment, while tradable industries struggle to compete due to currency appreciation and cheaper imports. This leads to job losses, curtailed innovation, and reduced diversification, thereby heightening economic vulnerability to resource price fluctuations. Unable to match wage levels in the resource sector or compete with cheaper imports, manufacturing and agriculture gradually lose market share, leading to deindustrialization (Corden & Neary, 1982; Sachs & Warner, 2001).

The inflow of natural resource revenues may induce systemic, economy-wide crowding out, as governments in resource-rich settings often expand spending and absorb labor and capital into

non-tradables. While such investments have developmental benefits, they can also displace private sector activity by heightening demand for financial resources (Dornbusch, Fischer and Startz, 2018). Constrained investment in tradable industries can lead to manufacturing output declining relative to services and construction, reflecting crowding out. Empirical evidence indicates that this displacement often materializes through constraints on credit supply rather than significant increases in lending rates; for instance, in a panel analysis of 28 oil dependent countries, Anyanwu, Gan, and Hu (2017) found that a 1% rise in government domestic borrowing led to a 0.22% decrease in private credit, with negligible impact on interest rates. They further highlight that the crowding out effect may operate both directly through real credit diminishment and indirectly via financial channels, though contextual differences affect the dominant transmission path. However, the relationship is not uniform: Ampofo, Jinhua, Bosah, Ayimadu and Senadzo (2021) suggest that resource windfalls may occasionally mitigate credit constraints by facilitating external financing, thereby moderating the crowding out effect in some countries. Moreover, Francois, Konte and Ruch (2024) posit that whether public investment crowds in or out private investment depends greatly on the institutional and financial structure, underscoring the critical role of fiscal and governance design in resource-rich contexts. This dynamic suppresses private investment and entrepreneurial activity, and when it is combined with Dutch disease pressures and resource price volatility, it exacerbates structural imbalances, ultimately reducing diversification and deepening reliance on resource revenues (Gylfason, 2001)

The Rybczynski theorem offers an additional framework for Dutch disease. This theorem, originating in trade theory, characterizes how shifts in factor endowments translate into sectoral output. Holding other factors constant, an increase in one factor disproportionately raises the output of the sector that uses it intensively, while the output of the other sector contracts (Yokoyama, 1989). Applied to resource-rich economies, under the Rybczynski mechanism, when a natural resource boom generates a positive wealth shock and the booming sector is relatively capital intensive, the resulting higher revenues raise demand for capital and divert it from more labor-intensive activities such as manufacturing and agriculture. Consequently, this reallocation not only distorts the structure of production but also creates an asymmetrical allocation of factors of production, marked by an excessive concentration of investment and policy attention in the natural resource sector, coupled with the relative neglect of other sectors such as tradable manufacturing and agriculture (Yokoyama, 1989; Pfingsten & Wolff, 1993).

From the perspective of the Prebisch-Singer hypothesis (PSH), there is a clear conceptual linkage between Dutch disease dynamics and the long-run concerns of structuralist trade theory. The PSH posits that over the long run, the terms of trade for primary commodities deteriorate relative to those of manufactured goods, thereby offering a strong external price argument against reliance on primary commodity specialization (Prebisch, 1950; Singer, 1950). The theoretical connection becomes particularly concerning when manufacturing is assumed to embody learning by doing effects and dynamic scale economies. In such cases, as PSH suggests, the contraction of the manufacturing sector induced by Dutch disease generates long lasting growth costs. Formal models have shown how even small, temporary resource booms can have persistent adverse effects when tradables are associated with knowledge externalities and technological spillovers (Krugman, 1987; Torvik, 2001). The mechanism that the Dutch disease triggers can reinforce the very pattern of specialization that the PSH warns against. While Dutch disease triggers appreciation and sectoral reallocation in the present, the PSH suggests that the long-run trajectory of commodity prices will further worsen external terms of trade, amplifying vulnerability (Prebisch, 1950; Singer, 1950). The two mechanisms are mutually reinforcing: internal distortions today, followed by adverse external price shocks tomorrow. The PSH provides the price trend premise, while Dutch disease represents the transmission mechanism.

Recent empirical studies provide support for these theoretical mechanisms while also highlighting cross-country heterogeneity. For instance, Reisinezhad (2024) using a comprehensive sample of 152 countries, finds that resource booms indeed appreciate REERs especially in resource poor countries and slow manufacturing growth relative to services in resource-rich countries. Similarly, Harding, Stefanski, and Toews (2020) show that in 23 Organisation for Economic Co-operation and Development (OECD) countries, major resource discoveries such as oil and gas caused significant currency appreciation and a decline in manufacturing employment shares. Maranon and Kumral (2020) identify comparable mechanisms during Chile's copper boom, though with some mixed evidence on the magnitude of sectoral shifts through causality and cointegration tests. In contrast, Pasaribu (2020) reports across 149 countries that in some contexts, natural resource rents may support manufacturing growth, suggesting that institutional frameworks and fiscal policy play a critical role in mediating Dutch disease dynamics. Therefore, in sum the Dutch disease creates significant economic distortions by undermining non-resource tradable sectors, fostering dependence on resource rents, and heightening vulnerability to external shocks in resource prices (Corden, 1984; Sachs & Warner, 2001). These findings confirm the relevance of

the spending and resource movement effects and therefore the traditional Dutch disease mechanism remains a foundational framework, but variation across different contexts exists due to the importance of country-specific characteristics such as resource dependence, institutional quality, fiscal policy, external financing, and sectoral spillovers.

3. TURKISH ECONOMY AND THE DUTCH DISEASE QUESTION

The Turkish economy between 2000 and 2024 displays a recurrent configuration of forces that produced Dutch disease-like dynamics without a commodity boom. After the 2001 crisis, several structural reforms were implemented, International Monetary Fund (IMF)-anchored stabilization raised fiscal and monetary credibility (IMF, 2014). As part of restructuring efforts, the Banking Regulation and Supervision Agency (BRSA) was established, and a new regulatory framework was introduced for the financial system. Subsequently, measures were taken to ensure fiscal discipline in the public sector, including raising taxes, curbing expenditures, and reducing budget deficits. As budget deficits declined, public borrowing decreased, inflation fell, interest rates began to drop, and the Turkish Lira (TRY) started to appreciate in value due to declining risk premium. Subsequently, 2005 represented a turning point in Türkiye's economic trajectory as accession negotiations with the European Union (EU) were initiated, and with the removal of six zeros from the currency, confidence in the TRY increased substantially, accelerating capital inflows into Türkiye. Due to the favorable climate created by macroeconomic stabilization and the EU accession negotiations, the economy entered a high growth phase financed by foreign capital and facilitated credits (Eğilmez, 2019). This period marked record Foreign Direct Investment (FDI) inflows between 2005 and 2007. Net inflows rose from the low single digit billions in the early 2000s to roughly United States Dollar (USD) 9 billion in 2005 and around USD 20-22 billion in 2006-2007, with a composition that included finance, telecoms, and real estate (World Bank, 2025).

In addition to the standard Dutch disease framework (Corden & Neary, 1982; Corden, 1984; Krugman, 1987; Torvik, 2001) contemporary syntheses generalize the booming source extends beyond hydrocarbons to include aid, remittances, tourism receipts, portfolio flows, and FDIs. These inflows tend to appreciate the REER and increase its volatility, weaken tradable industries and reduce net exports, reallocate labor and capital toward non-tradables through the spending and resource movement channels, and compress manufacturing profitability (Magud & Sosa, 2010; Rodrik, 2008). In Türkiye, the inflow channel often operated through privatization related FDI,

EU-driven optimism, and credit cycles rather than commodity exports. Periods of appreciation coincided with expansions in construction and services, while subsequent external tightening produced depreciation, partial reallocation back to tradables, and macroeconomic volatility. Manufacturing's share in gross domestic product (GDP) decreased, while construction and services grew disproportionately. Recent modeling work for emerging markets argues that capital inflow related overvaluation contributes to premature deindustrialization; this mechanism is widely viewed as salient where inflows, not resources, drive appreciations (Rodrik, 2016; Çakır & Aydemir, 2022). Capital inflows and credit deepening during the 2000s corresponded to pronounced REER appreciation and with compositional shifts toward construction and urban services, while competitiveness in export-oriented manufacturing weakened and external imbalances widened (IMF, 2014; Magud & Sosa, 2010). A construction-driven growth model in the 2000s, partially funded by foreign debt, reallocated resources to non-tradables. Construction-led expansions can raise output and employment in the short run through intensive building activity and upstream demand, yet long-run returns are typically low, assets are weakly tradable, and productivity spillovers are modest unless projects relieve clear bottlenecks. The visibility of projects and immediate job creation make construction spending politically attractive despite weak export prospects.

The post 2008 global environment did not fundamentally alter this pattern. Türkiye's comparatively low public debt and favorable growth narrative sustained sizable inflows even after the global financial crisis, yet investment tilted toward real estate and domestic services rather than toward productivity enhancing tradables. IMF surveillance repeatedly characterized the lira as stronger than fundamentals and documented the coexistence of rapid growth with chronic current account deficits, a configuration that signals overvaluation pressures and a non-tradables bias (IMF, 2014). Evidence summarized in policy and research work indicates appreciation compressed margins in low skill manufacturing and weakened export performance (Rodrik, 2008). The 2008-2013 period coincided with a notable consumption boom and perceived improvements in living standards, given the relative strong value of TRY against USD (Central Bank of the Republic of Türkiye [CBRT], 2025). The abundance of foreign currency inflows created a sense of prosperity, leading to excessive spending (Acemoglu & Ucer, 2015). Yet, this wealth was not effectively utilized; weaknesses in efficient resource allocation limited the sustainability of the period, as no substantial investments were made in high technology industries. As a result, the overvaluation of TRY stimulated imports and simultaneously constrained exports. Many industrialists abandoned

production and shifted to import-based activities, and the domestic market became overwhelmed with cheap imported goods. The availability of inexpensive imports fostered a widespread perception among consumers of rising welfare (Eğilmez, 2019). When the Board of Governors of the Federal Reserve System's (2025) tapering tightened global liquidity after 2013, capital outflows exposed Türkiye's reliance on external finance; the lira depreciated, inflation accelerated, and activity slowed across the economy, especially in real estate. Depreciation and inflation volatility followed, yet the tradables base did not regain ground in a durable way because imported input dependence, policy uncertainty, and shallow investment in export sophistication muted re-industrialization incentives (IMF, 2014; OECD, 2025). Türkiye's high import content of production and export bundles till 2017, magnifies the adverse effects of REER appreciation on tradables. This means; appreciated currencies cheapen imported intermediates but can erode export profitability and domestic value added when markups are thin and pass-through is incomplete (Kadırgan, 2023).

The culmination of these vulnerabilities was the 2018 currency crisis and a turbulent first half of the 2020s marked by unorthodox monetary experimentation, sustained inflation, and greater state intervention. Scholarly assessments describe an inflow-dependent, debt-led, and construction-centered growth regime in which speculative cycles in credit and real estate magnified external fragilities and paved the way to the crisis (Orhangazi & Yeldan, 2021; Akçay & Güngen, 2019). While nominal depreciation would ordinarily boost tradables, the realized net effect was mixed because inflation differentials and uncertainty partially eroded real competitiveness gains and complicated investment planning in export sectors (IMF, 2024). High import content in production chains, thin markups, and policy volatility limited the pass-through from depreciation to export capacity deepening, and external accounts remained sensitive to global liquidity and risk appetite. OECD surveillance in the mid-2020s notes the persistence of these structural tensions despite intermittent growth rebounds (OECD, 2025).

Tradable services, particularly tourism, constitute an alternative booming source of foreign exchange that can transmit Dutch disease mechanisms. As a large tourism hub Türkiye has experienced substantial FX inflows in this period (World Bank, 2025). Theoretical and empirical work on tourism in Türkiye demonstrates that while tourism receipts provided some relief to the external account, large receipts can replicate spending and resource movement effects, by weakening net exports in tradables, appreciating the REER, altering the composition of output and

shifting factors toward non-tradables and imported inputs (Ojaghlou, 2019). Episodes in which rapid tourism growth coincided with appreciation and pressure on industry, therefore replicate a Dutch disease channel, although magnitudes vary by specification (Holzner, 2011; Ojaghlou, 2019). Together with financially intermediated inflows, tourism amplified FX windfalls that financed construction booms and import-intensive consumption, reinforcing a Dutch disease-like tilt in the 2000s and early 2010s (Orhangazi & Yeldan, 2021).

Macroeconomic volatility intensified in the 2010s and early-to-mid-2020s. Annual CPI inflation reached 80.21% in August 2022 (Turkish Statistical Institute [TurkStat], 2025). By 2023-2025, policy normalization efforts aimed at rebuilding credibility were associated with a stabilization and partial recovery of the REER from the post 2018 trough. A substantial tightening raised the policy interest rate to 42.5% in December 2023 (CBRT, 2023) and to 50% in March 2024 (CBRT, 2024), with some easing in 2025, while inflation remained elevated through 2024-2025 (TurkStat, 2025). Concurrently, construction output rebounded strongly in 2024 and continued to rise into 2025, reflecting both cyclical normalization and reconstruction dynamics (TurkStat, 2025). Manufacturing's value added share remained resilient at about one fifth of GDP in 2023 after a temporary rise in 2022, indicating that Türkiye sustained a sizeable tradable base even as profitability and growth remained sensitive to REER movements and financing conditions (World Bank, 2025). FDI inflows also recovered from their post 2018 lows to approximately USD 11.3 billion in 2024 (World Bank, 2025). Sectoral composition over the same interval is compatible with a Dutch disease style tilt toward non-tradables during appreciation phases and only a partial reversal thereafter. A lag in tradables productivity growth compared to non-tradables, despite rising wages, may indicate a resource movement effect consistent with disproportionate expansion of construction and other domestically oriented activities during credit- and demand-driven booms (World Bank, 2025). The coexistence of high inflation, large interest rate adjustments, and only a partial REER recovery indicates that relative price misalignments and financing cycle swings continued to weigh on sectoral competitiveness and macroeconomic stability. The period underscores a structural dependence on external finance, which periodically transmits Dutch disease-like pressures through the exchange rate and relative prices (IMF, 2024; OECD, 2025; Devranoglu, Gumrukcu, & Hayatsever, 2025).

Türkiye's REER displayed pronounced cyclical swings consistent with alternating phases of capital inflow strength and crisis-driven stress. Using a 2005=100 index, as 2005 represented a

turning point in Turkish economy, the REER peaked at 113.3 in December 2007, indicative of elevated currency valuation and a squeeze on cost competitiveness in tradable sectors (CEIC, 2025). REER movements align with appreciation during inflow rich episodes in the 2000s and sharp depreciations during crisis years, a pattern that mirrors the broader role of effective exchange rates in transmitting external shocks to domestic relative prices. Similar indexes published by CBRT and Bank for International Settlements (BIS) use 2003 (2003=100) and 2020 (2020=100) as the base year respectively, also confirm this pattern[2] (CBRT, 2025; BIS, 2025). Additionally, the BIS (2025) index (2020=100) marks the recovery starting from 2020, quite later than the other two indexes. This means the struggling effects of REER appreciation was prominent in Turkish economy until 2020 according to the BIS (2025) index.

The REER movement pattern (BIS, 2025) and its relationship with foreign investments[3] to Türkiye (World Bank, 2025) can be a preliminary indicator for the Dutch disease-like symptoms in the economy for the first half of 2000s till 2008 (see Figure-1). Another observation is that even though there were high capital flows in the period after 2018, this time Türkiye seems to manage to keep the REER appreciation under control due to implemented policy decisions.
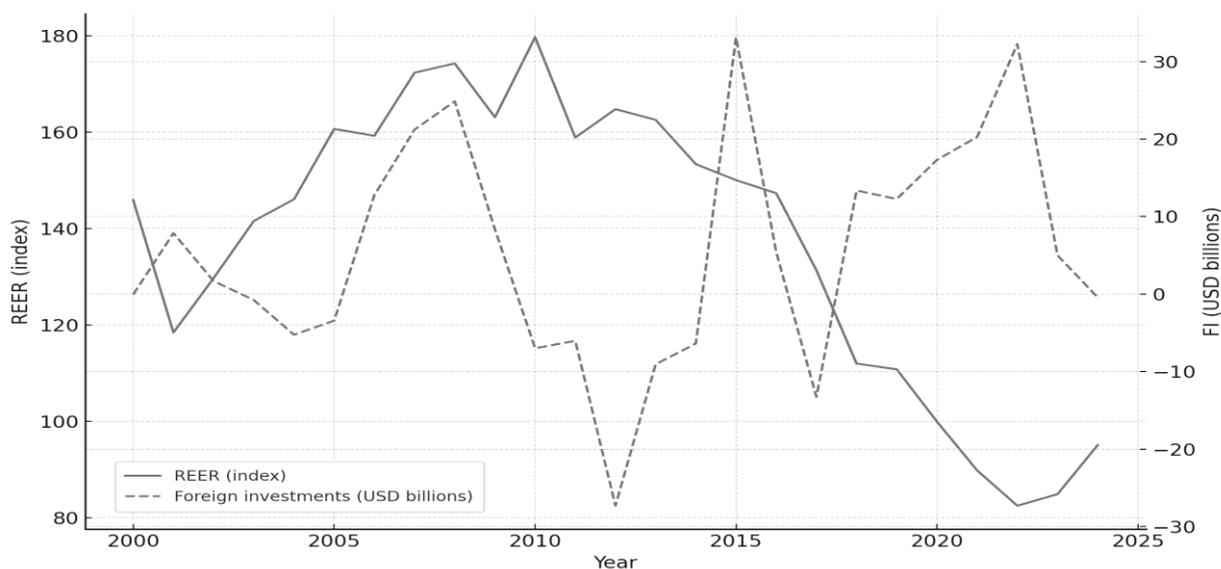

Figure 1. Türkiye - Foreign Investments (net) and REER, 2000-2024

Notes: Left axis shows REER (index 2020=100). Right axis shows net foreign investments (USD billions). Positive values denote net inflows; REER increases imply real appreciation.
Source: BIS, 2025; World Bank, 2025.

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[2] BIS methodology (2025) reveals that the pattern remains the same regardless of the base year, as it rescales levels but does not change growth rates, turning points, or econometric inference such as log changes.
[3] Net Foreign investments consist of FDI and portfolio investments in Türkiye in a given year (World Bank, 2025).

Taken together, Türkiye's trajectory over 2000-2024 is best interpreted as a capital inflow-driven Dutch disease (see Table-1). Successive inflow waves appreciated the REER and widened external deficits while reallocating resources toward non-tradables such as construction and local services; tourism receipts reinforced these pressures. Manufacturing profitability and its share in value added stagnated or declined as construction and local services expanded, and net exports thinned. This pattern accords with modern Dutch disease accounts that decouple the mechanism from commodity booms and link sustained overvaluation to weaker tradables performance and heightened macroeconomic financial vulnerability. In Türkiye, exogenous and policy-induced capital inflow surges together with tourism receipts repeatedly appreciated the REER, expanded non-tradables, and compressed manufacturing margins, which left the economy exposed when global liquidity turned. When financing conditions tightened, reversals proved costly, yet the tradable base endured in a cyclical manner, with investment highly responsive to the REER and to external funding conditions. Evidence from national and international sources supports this interpretation (Corden & Neary, 1982; Magud & Sosa, 2010; IMF, 2014, 2024; Orhangazi & Yeldan, 2021; BIS, 2025; CEIC, 2025; OECD, 2025; TurkStat, 2025; World Bank, 2025).

Table 1. Turkish Economy from a Dutch Disease Perspective, 2000-2024

Period	REER Dynamics (2005=100) (CEIC, 2025)	REER Dynamics (2020=100) (BIS, 2025)	Sectoral Dynamics (Tradables vs. Non-tradables) and Inflation
2000-2007	Pronounced REER appreciation (peaking around ~113), consistent with reduced external price competitiveness.	Steady increase in REER. Recording high levels around ~172 in 2007.	Capital-intensive expansion in construction and related activities; relative weakening of tradable manufacturing. Moderate inflation; broadly stable macroeconomic policy mix
2008-2012	Increased volatility with moderate depreciation.	Reaching peak levels for the country in 2008 and 2010, around ~174 and ~179, respectively.	Continued relative expansion of non-tradables; limited rebalancing toward tradables. Rising inflationary pressures; policy stance appears reactive and fragile.
2013-2017	Gradual depreciation.	Depreciation occurred, but REER was still at a significant level.	Stagnation in manufacturing and export-oriented capacity. Inflation is trending upward; growing policy uncertainty.
2018-2021	Sharp REER decline (trough around ~45).	Sharp decline towards REER below 100.	Further erosion of tradables' share; dominance of non-tradables persists. High and accelerating inflation; interest rate actions insufficient to anchor expectations.
2022-2025	Partial REER recovery (toward ~67), still below mid-2000s levels.	Remaining below 100; the REER appears contained.	No material revival in the industrial base; limited competitiveness gains. Persistently high inflation; tighter rates alongside continued structural rigidities.
Note: REER figures are indicative levels used to signal direction and magnitude, not precise estimates. Higher REER denotes a stronger domestic currency in real terms and potential pressure on tradable competitiveness.			

Source: IMF, 2024; BIS, 2025; CEIC, 2025; OECD, 2025; TurkStat, 2025; World Bank, 2025.

This raises the question of whether increased foreign investment, REER appreciation, rapid expansion of construction, and tourism can substitute for a resource boom and generate Dutch disease-like effects in Türkiye.

4. MEASURING THE DUTCH DISEASE IN TÜRKİYE

Operationalizing the Dutch disease has relied on complementary empirical strategies. A first approach tracks post boom reallocation across sectors by comparing the growth of resource extractive activities with non-resource tradables and services to infer effects on aggregate performance (Sachs & Warner, 1995). A second approach estimates movements in the REER to identify appreciation associated with commodity windfalls and to quantify its consequences for external competitiveness using econometric models (Frankel, 2012). A third approach evaluates external performance directly through trade-based and cost-based indicators, including trade balances, export volumes, and unit labor costs, to assess how resource abundance reshapes international competitiveness (Auty, 1993).

Among these approaches, identifying REER appreciation poses a preliminary task as Turkish economy lacks significant extractive resources to export. Therefore, in this case the foreign capital flows may imitate natural resource boom in the country and may trigger the REER appreciation. In order to check REER movements (BIS, 2025) and its relationship with respect to foreign investments (FI) to Türkiye (World Bank, 2025) for the 2000-2024 period, we employ a simple regression analysis under the ceteris paribus assumption. As the number of observations would be small, we intended to keep the model simple with only one regressor in Ordinary Least Squares (OLS) setting.

Therefore, we first test whether the REER movements are a result of capital flows to Türkiye. Accordingly, we define;

$REER_t$: as the dependent variable, as $REER_t$ increases country loses its international competitiveness due to the increased value of domestic currency.

FI_t: as the independent variable FI consists of FDIs and portfolio investments to Türkiye for the study period.

$$REER_t = \alpha + \phi REER_{t-1} + \beta_0 FI_t + \beta_1 FI_{t-1} + \varepsilon_t. \tag{1}$$

We extend the preliminary bivariate exercise by allowing for persistence in REER. Specifically, we estimate an autoregressive distributed-lag specification in which $REER_t$ depends on $REER_{t-1}$ and FI flows, considering models with and without a lag of FI. Model choice is based on the Bayesian Information Criterion (BIC) to balance fit and parsimony given annual data (Schwarz, 1978). Standard errors are computed using Newey-West HAC with one lag to mitigate serial correlation in the residuals (Newey & West, 1987). Augmented Dickey-Fuller (ADF) indicates non-stationarity in levels and stationarity in first differences (Dickey & Fuller, 1979, 1981). We also report the implied long-run effect of FI on the REER, defined as $(\beta_0+\beta_1)/(1-\phi)$, together with a delta method standard error (Oehlert, 1992). Allowing for dynamics in Autoregressive Distributed Lag (ARDL) framework, we consider both contemporaneous FI and a lagged term. Across specifications, the coefficient on $REER_{t-1}$ is sizeable, confirming high persistence. The BIC-preferred specification excludes FI_{t-1}, and the implied long-run FI effect is small and imprecise, indicating no robust delayed FI-to-REER pass-through at the annual frequency in 2000-2024. In other words, the contemporaneous effect of FI on the REER is statistically weak once persistence is controlled for, and adding a lag of FI does not deliver stable significance[4].

These findings indicate that foreign investments, taken in isolation, do not provide a robust explanation for Türkiye's REER dynamics once past REER is accounted for (see Table-2). The result of this initial step of the analysis is consistent with the view that fluctuations in the REER reflect a broader set of fundamentals and policy regimes, and that a credible multivariate specification should incorporate additional drivers. Thus, the paper explores further evidence for the Dutch disease-like symptoms in Türkiye.

Table 2. Preliminary model (1): REER on lagged REER and foreign investments (FI), 2000-2024

Variable	Coefficient	SE (HAC)	t-stat (HAC)	p-value (HAC)	Significance
Constant	7.302E+00	9.885	0.739	0.468	
REER_{t-1}	9.391E-01	0.069	13.704	0.000	***
FI_t	-1.642E-10	0.000	-1.105	0.282	
FI_{t-1}	-	-	-	-	-
LRM(FI)	-2.694E-09	0.000	-1.025	0.317	

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[4] ADF unit root tests are employed (Dickey & Fuller, 1979, 1981), Standard errors are Newey-West HAC (lag 1) (Newey & West, 1987). The dynamic baseline follows the ARDL framework (Pesaran, Shin & Smith, 2001), and lag order is selected by the BIC, which penalizes complexity by ln(n) (Schwarz, 1978). Long-run pass-through is reported with a delta method HAC standard error (Oehlert, 1992).

Notes: OLS ARDL with REER_t on REER_(t-1) and FI lags. Newey-West HAC (lag 1) standard errors. N = 24, $R^2 = 0.853$, Adj $R^2 = 0.839$, DW = 1.760. BIC-selected lag structure: FI lags = 0. Significance levels: * p<0.10, ** p<0.05, *** p<0.01. REER is BIS index (BIS,2025); FI in USD (World Bank, 2025).

Source: Author's calculations

In a more detailed approach, a baseline specification for detecting the incidence and intensity of Dutch disease begins with an explicit measure of natural resource dependence in aggregate output. Researchers typically use the ratio of resource export receipts to GDP, since higher ratios proxy greater exposure to commodity windfalls (Sachs & Warner, 1995). Then comparing REER behavior before and after identified booms is of utmost importance; a pronounced post boom appreciation is interpreted as evidence of spending and resource movement effects that erode external competitiveness (Chen & Rogoff, 2003; Javaid, 2009). Commodity-driven foreign currency inflows raise demand for the domestic currency, which appreciates in nominal and real terms and lifts domestic relative prices. To capture real side reallocation, empirical work contrasts growth in resource activities with growth in non-resource tradables and services; persistently faster expansion of the resource sector signals the sectoral imbalance associated with Dutch disease dynamics (Harding & Venables, 2016). External accounts provide a further lens. During boom episodes, deteriorating trade balances or import surges consistent with reduced competitiveness strengthen the case for Dutch disease mechanisms (Corden & Neary, 1982; Stijns, 2003). Taken together, higher resource dependence, marked REER appreciation, skewed sectoral growth, and adverse trade outcomes indicate stronger Dutch disease effects. Thus, the aim is to construct an index that summarizes Dutch disease pressures within a single economy and to relate that index to real outcomes.

Such an analysis begins by quantifying natural resource dependence in aggregate output. This is measured as total natural resource rents expressed as a share of GDP, which rises with heavier reliance on resource-based income (World Bank, 2025). Resource rents are defined as the profits generated from extracting a commodity and selling it at prices that exceed average extraction costs, so they are computed as the difference between market price and average production cost (World Bank, 2025). Thus, this serves as the indicator for resource dependence (RD)[5].

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[5] World Bank (2025) only published the total natural resources rents (% of GDP) till 2022. The data for 2022-2024 is proxied by aggregating oil/gas/coal/mineral/forest rents from available components (World Bank, 2025).

To complement resource dependence in measuring the Dutch disease, the analysis evaluates movements in the REER. An appreciation of the domestic currency, observed as a decline in the local currency per USD quote is taken as indicative of Dutch disease pressures on external competitiveness under right conditions such as substantial capital flows. Accordingly, we use BIS (2025) REER data which provide the latest base value available (2020=100).

Comparing export competitiveness and diversification also offers an additional test for the Dutch disease (Corden & Neary, 1982). Reductions in either dimension strengthen the diagnosis. The procedure calculates annual export shares for the resource (RS) and non-resource (NRS) sectors and compares them to detect sectoral reallocation and changes in diversification. In line with endowment-based trade theory, export structure reflects both natural resource abundance and labor skill composition (Wood & Berge, 1997). Operationally, NRS is proxied by manufactures exports as a percentage of merchandise exports, while RS is inferred as the residual share of primary exports obtained by subtracting manufactures from the total (World Bank, 2025). A rising RS share or a pronounced fall in the NRS share is interpreted as reduced diversification and competitiveness consistent with Dutch disease dynamics.

Trade balance dynamics provide an additional diagnostic for Dutch disease (Stijns, 2003). Deterioration in net exports (NX), reflected in larger trade deficits or rising import penetration relative to exports, is consistent with a loss of competitiveness associated with resource windfalls (World Bank, 2025). In implementing the index, net exports are oriented negatively: we take the absolute value in the growth term's denominator and premultiply the term by -1, so that higher values indicate a deterioration in the external balance.

Synthesizing evidence across indicators strengthens inference about Dutch disease. Greater resource dependence, pronounced REER appreciation, sectoral displacement, trade balance deterioration, and loss of competitiveness jointly indicate more severe symptoms. To summarize these patterns, an equal-weighted Dutch Disease Index (DDI) is constructed with the year 2020 as the base (index = 100).

So, let $t = t_0, \ldots, T$ denote years for a given country. We define;

RD_t: resource dependence, proxied by total natural resource rents as a share of GDP. We use RD_{t-1} lagged one year in order to reflect timing between a boom and macroeconomic responses. Higher RD implies worse symptoms.

$REER_t$: real effective exchange rate. An incline in $REER_t$ denotes domestic currency appreciation and loss in international competitiveness.

RS_t: resource sector export share or an equivalent resource sector intensity measure. Increased RS implies worse effects.

$NX_t = X_t - IM_t$: net exports in levels. We define; $NX^*_t = -\Delta|NX_t|$. So larger NX^*_t reflects a worsening external position.

Then we specify;

$A_t = 1/4 (RD_{t-1} + REER_t + RS_t + NX^*_t)$, equal weight pre-shift composite.

We set t_0=2020 and define rebase to base year (Rebase to 2020 = 100):

$DDI_t = 100 \times (A_t/A_{t0})$. This yields $DDI_{t0} = 100$. Increases in DDI_t indicate stronger Dutch disease pressures.

Thus it yields:

$$DDI_t = 100\{1/4(RD_{t-1} + REER_t + RS_t + NX^*_t)\} / \{1/4(RD_{t0-1} + REER_{t0} + RS_{t0} + NX^*_{t0})\}. \qquad (2)$$

We construct a single country Dutch Disease Index (DDI) for the period 2000-2024, that aggregates four oriented components; resource dependence (lagged), exchange rate appreciation, resource sector share, and external balance deterioration, using equal weights. Components are transformed so that larger values reflect stronger Dutch disease pressures, and rebased to 2020 = 100 for interpretability.

As the DDI moves above the base value of 100, it indicates stronger Dutch disease-like symptoms; values below 100 suggest an absence or mitigation of such symptoms over the analysis period (see Table-3 and Figure-2).

Table 3. DDI (2020=100)

Year	DDI	Year	DDI	Year	DDI	Year	DDI
2000	173.21	*2007*	68.9	*2013*	65.66	*2019*	-184.23
2001	-5.5	*2008*	64.61	*2014*	44.72	*2020*	100
2002	71.25	*2009*	33.92	*2015*	41.19	*2021*	-0.84

2003	148.76	2010	245.16	2016	59.33	2022	408.76
2004	124.04	2011	82.99	2017	77.78	2023	29.35
2005	82.58	2012	47.98	2018	16.02	2024	0.74
2006	76.62						

Source: Author's calculations.
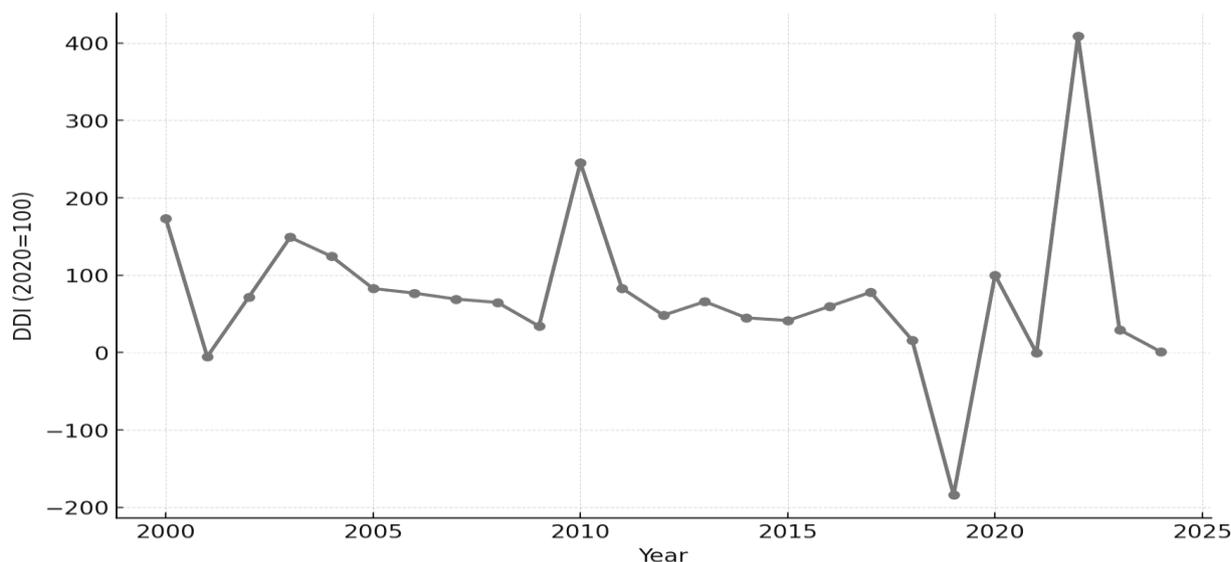
Figure 2. DDI (2020=100)

Source: Author's calculations.

Being that Türkiye has not been endowed with abundant natural resources, in order to check whether she experienced Dutch disease-like effects we can turn into indirect sources covered above such that they could replicate the same deteriorating effects for the economy. Such variables would include FI, construction gross value added (CGVA) and international tourism receipts (ITR). Therefore, in this study we explore these variables' effect on DDI to elaborate their potential role on Dutch disease-like effects in Türkiye. Accordingly, as defined above FI includes both FDIs and portfolio investments for the 2000-2024 period (World Bank, 2025). CGVA variable comes from International Standard Industrial Classification for all Economic Activities (ISIC) F classification USD current prices (United Nations Statistics Division, 2025; TurkStat, 2025). Finally, ITR reported in current USD, comprise the expenditures of non-resident visitors within the destination economy, and typically include payments to resident (national) carriers for international transport. They also encompass any prepayments for goods and services consumed in the destination country and may include spending by same day visitors (World Bank, 2025; TurkStat, 2025).

So we define;

GDP$_t$: Current price totals for Türkiye for the study period (World Bank, 2025).

FI$_t$: as before the agglomeration of FDIs and portfolio investments to Türkiye.

CGVA$_t$: the share of construction in GDP.

ITR$_t$: tourism revenue including transport, purchases of goods and services and spending from internationals.

We explain movements in the DDI using sectoral and external flow exposures scaled by the size of the economy. The preferred baseline regresses the level of the DDI on a sign preserving transformation of financial flows and logarithmic sectoral shares, while absorbing major breaks, such as 2008 crisis or COVID-19 outbreak:

$$DDI_t = \alpha + \beta_1 asinh(FI_t/GDP_t) + \beta_2 ln(CGVA_t/GDP_t) + \beta_3 ln(ITR_t/GDP_t) + \delta_1 Crisis08_t + \delta_2 Covid_t + \varepsilon_t. \tag{3}$$

Equation (3) is estimated by OLS with Newey-West (HAC) standard errors[6] (lag = 1). The $asinh(x)$ transform preserves the sign of (potentially negative) net portfolio flows and behaves log-like at larger magnitudes, yielding coefficients that are directly comparable to log terms. Logs applied only to variables that have strictly positive ratios; whereas $asinh(x) = ln(x + \sqrt{x^2 + 1})$ is applied for flows that can be ≤0 (see Table-4).

Table 4. Levels, HAC

Variable	Coefficient	SE (HAC)	t-stat (HAC)	p-value (HAC)	Significance
constant	-1271.0665	363.0027	-3.5015	0.0005	***
asinh_fi	251.7549	1220.4644	0.2063	0.8366	
ln_cgva_gdp	-191.2261	63.7685	-2.9988	0.0027	***
ln_itr_gdp	-254.7992	107.1591	-2.3778	0.0174	**
crisis08	-56.2213	37.7062	-1.491	0.136	
covid	-204.1412	57.0931	-3.5756	0.0003	***

Notes: Newey-West (HAC) standard errors (lag = 1). Annual data, Türkiye, 2000-2024; effective sample smaller in models with differences/lags (e.g., T = 25; effective T = 24). Dummies for 2008-2009 (Global Financial Crisis) and 2020-2021 (COVID-19) included. Dependent variable: DDI (2020=100). Regressors: asinh(FI/GDP), ln(CGVA/GDP), ln(ITR/GDP). Significance levels: * p<0.10, ** p<0.05, *** p<0.01.
Source: Author's calculations.

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[6] Newey-West (HAC) SEs (Newey & West, 1987).

In this specification, increases in the construction and tourism shares are associated with higher DDI readings (semi elasticities given by β_2 and β_3), while the coefficient on asinh(FI/GDP) captures the contribution of net financial inflows/outflows after accounting for their sign and scale. To mitigate trend-driven artefacts, we also estimate a first-difference model,

$$\Delta DDI_t = \alpha + \gamma_1 \Delta asinh(FI_t/GDP_t) + \gamma_2 \Delta \ln(CGVA_t/GDP_t) + \gamma_3 \Delta \ln(ITR_t/GDP_t) + \delta_1 Crisis08_t + \delta_2 Covid_t + u_t. \tag{4}$$

Thus equation (4) confirms that year-to-year increases in construction and tourism intensity co-move with increases in the DDI. Finally, to capture persistence and short-run dynamics we estimate an ARDL(1,1,1,1)[7],

$$DDI_t = \alpha + \phi DDI_{t-1} + \theta_{1,0} \, asinh(FI_t/GDP_t) + \theta_{1,1} \, asinh(FI_{t-1}/GDP_{t-1}) + \theta_{2,0} \ln(CGVA_t/GDP_t) + \theta_{2,1} \ln(CGVA_{t-1}/GDP_{t-1}) + \theta_{3,0} \ln(ITR_t/GDP_t) + \theta_{3,1} \ln(ITR_{t-1}/GDP_{t-1}) + e_t, \tag{5}$$

which indicates statistically meaningful persistence in the DDI ($\phi > 0$) and allows contemporaneous and lagged effects of sectoral shares and tourism to differ (see Table-5 and Figure-3). The ARDL's implied long-run effects are $(\theta_{j,0} + \theta_{j,1})/(1-\phi)$ (reported with delta method standard errors) (See Table-6).

Table 5. ARDL Coefficients

Variable	Coefficient	SE (HAC)	t-stat (HAC)	p-value (HAC)	Significance
constant	-189.5251	565.1913	-0.3353	0.7417	
DDI2020_l1	-0.5912	0.2515	-2.3505	0.0319	**
asinh_fi	72.7001	1186.9145	0.0613	0.9519	
asinh_fi_l1	752.8858	1149.9359	0.6547	0.5219	
ln_cgva_gdp	663.6036	262.3578	2.5294	0.0223	**
ln_cgva_gdp_l1	-781.373	245.5855	-3.1817	0.0058	***
ln_itr_gdp	156.4844	115.3153	1.357	0.1936	
ln_itr_gdp_l1	-145.3436	92.2333	-1.5758	0.1346	

Notes: Newey-West (HAC) standard errors (lag = 1). Annual data, Türkiye, 2000-2024; effective sample smaller in models with differences/lags (e.g., T = 25; effective T = 24). Dummies for 2008-2009 (Global Financial Crisis) and 2020-2021 (COVID-19) included. Dependent variable: DDI (2020=100). Regressors: asinh(FI/GDP), ln(CGVA/GDP), ln(ITR/GDP). Significance levels: * p<0.10, ** p<0.05, *** p<0.01.
Source: Author's calculations.

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[7] Newey-West (HAC) SEs (Newey & West, 1987); ARDL framework (Pesaran, Shin & Smith, 2001).
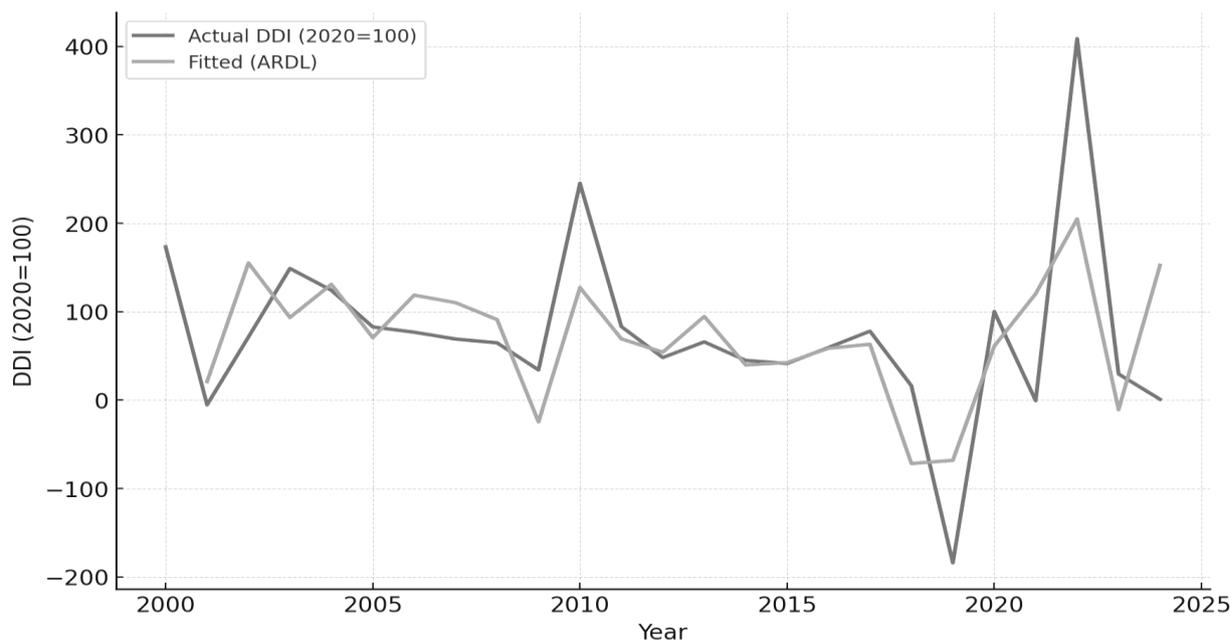
Figure 3. DDI (2020=100): Actual vs Fitted (ARDL(1,1,1,1))

Source: Author's calculations.

Across specifications, Newey-West standard errors are used, and crisis dummies for 2008-2009 and 2020-2021 improve residual stability. Across specifications, the results point to economically meaningful persistence in the DDI and positive associations with construction and tourism intensity, while the sign preserving treatment of financial flows allows both inflow and outflow episodes to be captured rather than discarded.

Table 6. ARDL Long-Run Multipliers

Regressor	Long-run effect	SE (HAC)	t-stat (HAC)	p-value (HAC)	Significance
asinh(FI/GDP)	518.8552	906.3947	0.5724	0.567	
ln(CGVA/GDP)	-74.0144	68.2223	-1.0849	0.278	
ln(ITR/GDP)	7.0016	79.9343	0.0876	0.9302	

Notes: Long-run effect computed as $(\theta_{j,0} + \theta_{j,1})/(1-\phi)$, where ϕ is the coefficient on DDI_{t-1}; standard errors are Newey-West HAC (lag 1) via delta method (Oehlert, 1992). Significance levels: * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Source: Author's calculations.

Annual macroeconomic series often display strong low frequency movements and possible unit roots, so estimating in levels risks spurious correlation if common trends are not fully absorbed. Although we control for major breaks (2008-2009; 2020-2021) and use Newey-West (HAC) SEs, slow moving components in DDI (2020=100) and in ratios like CGVA/GDP and ITR/GDP can still bias inference toward persistence. To address dynamics and potential non-stationarity, we

therefore (i) estimate a first difference specification, ΔDDI_t on $\Delta asinh(FI_t/GDP_t)$, $\Delta ln(CGVA_t/GDP_t)$, and $\Delta ln(ITR_t/GDP_t)$, which filters out stochastic trends and deterministic drifts while focusing identification on within period changes (noting that differencing can lower signal-to-noise and induce short-run MA errors, for which we retain HAC SEs and crisis dummies), and (ii) estimate an ARDL(1,1,1,1) in levels (see Table-7). Throughout, financial flows enter as asinh(FI/GDP) to retain negative observations, while sectoral exposures enter as ln(CGVA/GDP) and ln(ITR/GDP); structural breaks associated with the global financial crisis and the pandemic are modeled via dummies rather than endogenously searched[8].

Table-7. First Difference HAC

Variable	Coefficient	SE (HAC)	t-stat (HAC)	p-value (HAC)	Significance
constant	-9.9376	27.7591	-0.358	0.7203	
d_asinh_fi	531.5874	1266.9664	0.4196	0.6748	
d_lcgva	-30.1498	292.1436	-0.1032	0.9178	
d_litr	-133.492	114.3184	-1.1677	0.2429	
crisis08	10.7336	51.3177	0.2092	0.8343	
covid	58.2916	64.6571	0.9015	0.3673	

Notes: Newey-West (HAC) standard errors (lag = 1). Annual data, Türkiye, 2000-2024; effective sample smaller in models with differences/lags (e.g., T = 25; effective T = 24). Dummies for 2008-2009 (Global Financial Crisis) and 2020-2021 (COVID-19) included. Dependent variable: DDI (2020=100). Regressors: asinh(FI/GDP), ln(CGVA/GDP), ln(ITR/GDP). Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Source: Author's calculations

Relative to the baseline levels results, the first difference estimates preserve the signs of key coefficients as construction and tourism intensity remain positively associated with changes in the DDI, while magnitudes are naturally attenuated because they reflect short-run responses rather than level semi elasticities. Statistical significance is typically weaker in differences, consistent with the smaller effective sample and higher transitory volatility; however, the direction and relative ordering of effects are stable. Together with the ARDL evidence (persistence and long-run multipliers), the difference model supports the interpretation that the levels results are not driven by spurious trends: sectoral reallocation toward non-tradables and stronger external demand co-move with the DDI at both medium run and year-to-year horizons.

Using annual Turkish data for 2000-2024, we relate the Dutch Disease Index (DDI, 2020=100) to sectoral and external flow exposures scaled by the size of the economy. In the preferred levels specification, DDI is regressed on asinh(FI/GDP) and the logged shares ln(CGVA/GDP) and

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[8] ADF unit root tests (Dickey & Fuller, 1979, 1981); Newey-West (HAC) SEs (Newey & West, 1987).

ln(ITR/GDP), with dummies for 2008-2009 and 2020-2021 to absorb the global financial crisis and pandemic. Coefficients on the logged shares are semi elasticities (a 1% rise in the construction or tourism share changes DDI by 0.01β points), and HAC (Newey-West) standard errors address heteroskedasticity and mild serial dependence. As robustness, a first difference model (ΔDDI on Δ regressors) mitigates spurious trend concerns and confirms that year-to-year increases in construction and tourism intensity co-move with increases in DDI. A dynamic ARDL(1,1,1,1) in levels shows economically meaningful persistence in DDI and allows short-run effects of asinh(FI/GDP), ln(CGVA/GDP), and ln(ITR/GDP) to differ from their lagged impacts; the implied long-run multipliers indicate that reallocation toward non-tradables (construction) and stronger external demand (tourism receipts) are associated with higher DDI readings, while the sign preserving treatment of financial flows retains information from both inflow and outflow episodes. Given the relatively short annual sample (T=25; effective T=24 in models with lags), statistical precision is limited; however, coefficient signs and magnitudes are stable across levels, first difference, and ARDL specifications and are consistent with the proposed interpretation.

5. CONCLUSION AND POLICY IMPLICATIONS

The literature of the cautious management of capital flows originating in resource revenues focuses intertemporal smoothing through sovereign wealth funds that invest a substantial share of resource revenues abroad and restrict annual fiscal use to a small, rule-based fraction (Stiglitz, 2004). This arrangement alleviates commodity price volatility, supports intergenerational equity, and reduces domestic demand pressures that would otherwise amplify appreciation and inflation (Wills, Senbet & Simbanegavi, 2016; Mien & Goujon, 2022). In Norway, the fiscal framework limits structural non-oil budget spending to a small share of the sovereign fund's value and places the bulk of petroleum revenues in foreign assets, which helps moderate exchange rate pressures and stabilizes domestic prices; as of mid-2025, Norwegian Government Pension Fund Global's value has reached approximately USD 2.04 trillion, making it the world's largest state-owned investment fund (Norges Bank Investment Management, 2025). The same logic can be adapted to manage non-resource capital inflow windfalls by saving a sizeable portion abroad and releasing only a modest flow to the budget each year, thereby smoothing the real exchange rate path and reducing macroeconomic financial fragility.

To prevent Dutch disease, whether it is originated from natural resources boom or financial surges, insulating the economy from currency appreciation and crowding out effects would yield successful results. In addition to sovereign wealth funds, successful policy tools include sterilized

FX intervention, prudent fiscal rules, and targeted industrial policies in order to preserve tradables capabilities (van der Ploeg, 2011; Faltermeier, Lama, & Medina, 2017). In detail, cross-country evidence suggests that deeper financial systems with macroprudential policies and capital flow management (CFM) tools designed to limit capital flows to reduce macroeconomic and financial risks, can damp the REER impact of inflows and reduce sectoral distortions. IMF work shows that financial development and selected CFMs thin out appreciation from foreign capital surges; thus, CFMs can serve as a response to Dutch disease risks in emerging markets (Saborowski, 2009; Yepez, 2023). For Türkiye, the policy relevance is clear given the stop-go pattern of inflows and credit cycles.

A complementary strand of the literature emphasizes exchange rate flexibility and domestic saving rebalancing to curb persistent overvaluation and demand side overheating, a view echoed in country assessments for Türkiye that link periods of REER overvaluation to external imbalances and call for structural measures to raise productivity in tradables (Iossifov & Fei, 2019). Consistent with this perspective, mitigation proposals prioritize a countercyclical macroeconomic financial stance that uses CFM tools where appropriate, deeper domestic financial intermediation to improve allocation, exchange rate flexibility to avoid entrenched overvaluation, and structural policies to raise productivity and domestic value added in tradable activities (Akçay & Güngen, 2019; Kadırgan, 2023; Iossifov & Fei, 2019).

These dynamics motivate a policy mix consistent with the theoretical and policy literature. During inflow episodes, authorities can limit excessive real appreciation by combining FX reserve accumulation with sterilization, macroprudential restrictions on credit growth, and prudential limits on unhedged foreign currency borrowing, which together temper the spending effect, curb FX-leveraged credit, reduce the amplitude of real exchange rate swings and lower balance sheet vulnerabilities (IMF, 2024). Sustaining the learning externalities embedded in tradable activities requires stable relative prices alongside complementary instruments that foster export-linked innovation and human capital deepening so that firms' capabilities and product sophistication are less sensitive to temporary movements in the real effective exchange rate (Krugman, 1987; Torvik, 2001). In practice, this means purchasing foreign currency during booms and tightening rules on credit and FX exposure, including surcharges on banks' FX borrowing outside core deposits and limits on FX derivative positions (Yepez, 2023; Magud & Pienknagura, 2023). Since Türkiye's transmission mechanism operates through capital and tourism rather than commodity rents, the

priority is to smooth the external finance cycle and to deepen domestic savings and long-term funding so that tradables investment is less exposed to global push-pull forces.

Türkiye does not exhibit a textbook case of Dutch disease because the economy neither relies on natural resource windfalls nor exports such commodities in a self sustaining way; however, this absence does not imply that Dutch disease-like effects are irrelevant. Episodes characterized by large capital inflows, REER appreciation, and sectoral reallocation toward non-tradables, with construction and tourism expanding while industrial competitiveness weakened and REER misalignment persisted, have produced patterns that resemble financial variants of the syndrome. These dynamics have fostered relative deindustrialization and have interacted with structural vulnerabilities such as current account deficits and high inflation, raising concerns about external competitiveness and growth sustainability. A careful diagnosis therefore calls for continuous monitoring of exchange rate dynamics, productivity trends, and the tradable non-tradable composition of output, alongside a policy mix that strengthens the tradable base. Priority measures include targeted support for manufacturing exports, innovation and capability upgrading that reduce firms' sensitivity to temporary real exchange rate swings, export diversification that lifts domestic value added, and, where appropriate, FX reserve accumulation and macroeconomic financial tools that alleviate appreciation pressure during inflow cycles (Rodrik, 2009). Taken together, these interventions would not only address Dutch disease-like mechanisms but also improve the overall configuration of the Turkish economy by anchoring productivity growth in tradables and stabilizing relative prices.

In short, Dutch disease-like phenomenon is driven by financial globalization and domestic policy choices rather than natural resource windfalls in Türkiye. Thus, a coherent framework to mitigate Dutch disease-like distortions in Türkiye combines macroeconomic policy, structural reform, and institution building. Exchange rate policy should avoid prolonged real appreciation by anchoring credibility and adopting a countercyclical monetary stance; rather than targeting the exchange rate, authorities can accumulate foreign reserves during inflow periods and allow greater depreciation flexibility during outflows to smooth the REER. Industrial policy should revitalize tradables by improving cost competitiveness, strengthening supply chain integration, and supporting technology upgrading through targeted fiscal incentives for high value added manufacturing, research and development credits, and programs that help small and medium enterprises enter and scale in export markets. Public investment needs to shift from low productivity construction

toward infrastructure that raises tradables' productivity, including logistics, digital networks, and green technologies. Education and labor market reforms should reduce skill mismatches and build human capital aligned with export-oriented activities in engineering, advanced manufacturing, and software. Institutional reforms that enhance the rule of law, property rights, and regulatory predictability are necessary to attract long-term productive investment and curb rent seeking in non-tradables. These priorities align with broader development evidence on resilience and long-run growth in the structuralist tradition (Gylfason, 2001; Pfingsten & Wolff, 1993; Prebisch, 1950; Stiglitz, 2004; Yokoyama, 1989; Hillden & Masterton, 2005).

In sum, the paper's originality lies in applying a Dutch disease mechanism lens to a non-commodity, externally financed boom, and in translating that lens into a simple, reproducible index for Türkiye over 2000-2024 period. This combination of mechanism mapping, index construction, and empirical triangulation provides a portable template for diagnosing similar episodes in other emerging markets.

DECLARATION OF ETHICAL STANDARDS

The author of the paper submitted declares that nothing which is necessary for achieving the paper requires ethical committee and/or legal-special permissions.

CONTRIBUTION OF THE AUTHORS

Mehmet Emre Görgülü: Writing, Methodology, Data Collection, Analyses, Review & Editing.

CONFLICT OF INTEREST

There is no conflict of interest in this study.

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