

## Trade Leadership without Monetary Convergence: Türkiye's Integration with the OIC

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### ABSTRACT

Monetary integration among Organization of Islamic Cooperation (OIC) member countries has long attracted academic attention, yet empirical studies specifically targeting Türkiye, an economically and institutionally significant OIC member, remain limited. This study reassesses the feasibility of monetary integration between Türkiye and the OIC using updated conditions through 2025, along with its explanatory factors. Applying the Optimum Currency Area (OCA) index of Bayoumi and Eichengreen to forty-three Türkiye-OIC bilateral pairs across three ten-year periods, each pair is classified into prime converged, converging, or little converged categories, after which four explanatory criteria, namely business cycle synchronization, inflation similarity, intra trade openness, and economic size, are tested through a panel fixed effect regression. The results show that Türkiye achieves prime or converging status with only about fifty-one percent of its OIC partners, comprising ten prime converged pairs, twelve converging pairs, and twenty-one little converged pairs, a considerably smaller share than the near universal convergence reported in the benchmark study on Indonesia. The panel regression confirms inflation similarity as the only variable significant at the 1 percent level, with the model explaining roughly sixty-four percent of the variation in bilateral symmetry (adjusted R squared of 0.64), while business cycle synchronization, trade openness, and economic size are not significant. These findings indicate that Türkiye's persistently high inflation differential and the lira's chronic depreciation are the principal obstacles to its currency symmetry with the OIC, even as its trade leadership continues to strengthen through its 2025 COMCEC chairmanship. This study confirms that trade leadership can outpace monetary integration, and that domestic price stability, rather than trade diversification, is the precondition for deepening it.

**Keywords:** Monetary Integration, Business Cycle Synchronization, OIC, OCA Index

### INTRODUCTION

Monetary integration remains a recurring aspiration across various regional economic blocs, long after the launch of the Euro demonstrated that a shared currency can be realized in practice. The Gulf Cooperation Council once pursued a common currency called the Khaleeji, and ASEAN continues to explore the possibility of a parallel monetary unit, yet neither initiative has progressed as far as the Eurozone. Within the Organisation of Islamic Cooperation (OIC), the question of whether such a much larger and more heterogeneous group of Muslim majority economies could achieve a comparable degree of monetary symmetry has long attracted scholarly attention, and the conclusions have generally been pessimistic about the cohesion of the group as a whole.

Among the OIC's fifty seven members, Turkey occupies an unusual position. It is simultaneously one of the most economically significant members of the organization and one of the most institutionally engaged, hosting SESRIC, IRCICA, and the OIC Arbitration Center in Ankara and Istanbul. Turkey's commercial footprint within the bloc has also grown considerably. Trade with fellow OIC members rose from about 8.5 billion US dollars in 2002 to roughly 113 billion US dollars in 2024, making Turkey the organization's third largest trading nation. The OIC's share of Turkey's total exports climbed from 12 percent in 2002 to 27 percent in 2024, with a short term target of 30 percent and a 2030 target of 35 percent, while intra OIC trade as a share of member states' total foreign trade also edged up from about 19 percent in 2023 to 20 percent in 2024.

This deepening trade integration has unfolded alongside macroeconomic conditions that are far from stable. Turkey's economy stood at roughly 1.6 trillion US dollars in 2025, the seventeenth largest in the world, with growth close to 3.5 percent. Consumer price inflation did fall from an exceptionally high average of 58.5

percent in 2024, yet it still averaged around 35 percent through 2025 and remained above 30 percent by year end. The lira continued its long run of controlled depreciation, losing about 17 percent of its value against the dollar over 2025 and trading above 40 lira per dollar. The current account deficit widened to about 25 billion dollars in 2025, still a modest 1.5 percent of GDP but considerably larger than the 10-billion-dollar deficit recorded in 2024. It is this combination, deepening trade integration alongside chronic monetary instability, that forms the starting point for this study.

Understanding Turkey's position within the framework of the Optimum Currency Area (OCA) matters for more than academic reasons alone. For OCA theory itself, the Turkish case offers a rare test of how a country with substantial economic and trade weight, yet a volatile history of inflation and exchange rate movement, behaves within a bloc that is geographically dispersed and structurally heterogeneous. For policymakers, Turkey's continually rising OIC export targets imply an economic diplomacy strategy that assumes ever closer ties with fellow member states, making it important to know whether such ties also carry implications for monetary policy coordination and exchange rate risk management. For businesses and investors trading with Turkey, the degree of monetary symmetry bears directly on their exposure to exchange rate volatility in cross border transactions (Khalid et al., 2025; Yorulmaz et al., n.d.). The question of Turkey's monetary symmetry is thus not merely a theoretical exercise but bears directly on the direction of trade policy and regional financial stability.

At the level of the OIC as a whole, studies by (Noon et al., 2018) tend to conclude that the group is too heterogeneous to form meaningful monetary symmetry, echoing the fate of the Gold Dinar proposal, which has largely remained at the level of discourse. However, has increasingly been challenged by studies that assess feasibility at the country pair level applied an OCA index to 44 OIC members and found that 63 percent of the country pairs examined were in fact ready or nearly ready to form a currency union, with business cycle synchronization, trade openness, inflation similarity, and economic size standing out as the main explanatory criteria. (Belhadj et al., 2026) add further nuance through fuzzy and hard clustering approaches, showing that certain subgroups, such as the Arab Economic Union countries and part of the Economic Cooperation Organization membership, share enough structural similarity to plausibly form a common currency area, even as the OIC as a whole remains too diverse (Bensaid, 2025). What emerges from this literature is no longer a simple yes or no answer, but one that depends on the unit of analysis, whether the OIC is treated as a single bloc or as a collection of country pairs and subgroups whose readiness varies considerably (Gunduz et al., 2021)(Song & Turner, 2026).

Research addressing this gap remains limited to studies that specifically measure Turkey's bilateral monetary symmetry against the rest of the OIC membership using an OCA index, meaning Turkey's position has so far only been visible implicitly within OIC wide averages or aggregate clusters. The existing literature has also done little to reconcile how a country with a steadily growing intra OIC trade footprint, yet a chronic history of unstable inflation and exchange rates, should be classified, whether trade integration precedes monetary convergence as the OCA endogeneity hypothesis predicts, or whether Turkey's macroeconomic instability instead dominates and keeps it apart from symmetry with fellow members. Most OCA studies on the OIC also rely on data that predate Turkey's disinflation and monetary tightening following the lira crisis of 2021 to 2023, leaving the more recent dynamics of Turkey's trade and macroeconomic relationship with the bloc uncaptured.

This gap the present study offers novelty on several fronts at once. It is the first study to construct a bilateral OCA index between Turkey and the other 42 OIC members using up to date trade and macroeconomic data through 2024 and 2025, thereby capturing the disinflation period and monetary policy adjustments that earlier studies have not reflected. Rather than treating Turkey as a single data point among dozens of OIC members as bloc level studies typically do, this study places Turkey as the central unit of analysis, allowing variation in its monetary symmetry with each partner to be observed at a granular level. A further contribution lies in combining the OCA index with a panel regression model that tests four explanatory criteria at once, business cycle synchronization, inflation similarity, intra trade openness, and economic size, so that the study moves beyond descriptive measurement to also trace the factors that drive or hinder that symmetry.

Methodologically, this study follows the Bayoumi and Eichengreen approach (Verdie et al., 2024) to operationalizing OCA theory, calculating a symmetry index for each Turkey OIC partner pair based on the differential in output growth, the differential in inflation, bilateral exchange rate volatility, and trade intensity (Bağcı & Bakımlı, 2025). This index then serves as the dependent variable in a panel data regression model in which business cycle synchronization, inflation similarity, intra trade openness, and economic size are treated

as explanatory variables, allowing the identification of which criteria best explain the pattern of Turkey's monetary symmetry within the OIC.

Building on the discussion above, this study aims, first, to measure the degree of bilateral currency symmetry between Turkey and the other 42 OIC members through an OCA index, and second, to test the influence of business cycle synchronization, inflation similarity, intra trade openness, and economic size on that degree of symmetry through a panel regression model. Through these two aims, the study seeks to determine whether the expansion of Turkey's commercial footprint within the OIC is genuinely accompanied by meaningful monetary convergence, or whether it remains constrained by the very history of inflation and exchange rate volatility that has long characterized the country.

## METHODOLOGY

### The OCA Index

Following Bayoumi and Eichengreen (Alemu et al., 2026), monetary symmetry between Türkiye (country i) and a given OIC partner (country j) is measured using the standard deviation of changes in the logarithm of the bilateral nominal exchange rate (l, j). the OCA index is specified as follows (Ebaya et al., 2022; Rinaldi et al., 2024).

$$\ln(e_{t+1}^i - e_t^i) \quad (1)$$

and for country j,

$$\ln(e_{t+1}^j - e_t^j) \quad (2)$$

these two series combine into the OCA index as.

$$OCA = \sigma(\delta \ln e_{ij}) \quad (3)$$

The OCA (Optimum Currency Area) index is used to measure the degree of monetary closeness between two countries based on the movement pattern of their bilateral exchange rate (Svrtinov & Krstev, 2025). In this notation,  $\sigma$  denotes the standard deviation operator,  $e$  represents the nominal bilateral exchange rate between country i and country j,  $\delta$  indicates the change over a given period,  $\ln$  is the natural logarithm,  $t$  indexes time, while i and j respectively index the two countries being compared (Hafner, 2024) (Kunovac et al., 2022).

Conceptually, this index is derived from the standard deviation of the change in the natural logarithm of the bilateral exchange rate over time (Salisu et al., 2023). A smaller standard deviation reflects a more consistent co movement between the two countries' exchange rates, which points to closer monetary symmetry between them. Conversely, a larger standard deviation signals relatively higher volatility and a weaker monetary linkage between the two countries (Li et al., 2026). Based on the three-category classification adopted in this study, country pairs are grouped as follows (Schuster-Johnson, 2025) (Asteriou et al., 2025):

1. An OCA index between 0.0000 and 0.0250 identifies a pair of prime converged countries.
2. An OCA index between 0.0251 and 0.0770 identifies a pair of converging countries.
3. An OCA index above 0.0770 identifies a pair of little converged countries.

This classification is used to assess the degree of monetary symmetry between Türkiye and each member country of the Organisation of Islamic Cooperation (OIC) (Kunovac et al., 2022). The lower the OCA index, the more stable the bilateral exchange rate movements and the greater the potential for the two countries to satisfy one of the prerequisites for forming an optimum currency area (Hafner, 2024).

It should be noted that several OIC member countries adopt similar exchange rate arrangements. Several African countries use the CFA franc, which is pegged to the euro, whereas a number of Gulf countries maintain fixed or relatively stable exchange rates against the US dollar (Ozkaya & Altun, 2024). Under these arrangements, movements in the bilateral exchange rates between their currencies and the Turkish lira primarily reflect fluctuations in the lira against the respective anchor currencies (Tsang, 2023). Consequently, countries that peg their currencies to the same anchor currency tend to generate identical or closely similar OCA index values in relation to Türkiye (Juhro et al., 2022). A comparable pattern was documented in previous research on Indonesia's monetary integration and is again observed in the present study (Aginta & Someya, 2022).

### Panel Regression Estimation

Following the calculation of the OCA index, panel data regression analysis is employed to identify the factors explaining variations in monetary symmetry between Türkiye and OIC member countries (Svrtinov & Krstev, 2025). The OCA index serves as the dependent variable, while the explanatory variables comprise four key criteria derived from optimum currency area theory: business-cycle synchronisation, inflation similarity, bilateral trade openness, and economic size (Salisu et al., 2023).

The selection and specification of these variables follow the empirical framework developed by Bayoumi and Eichengreen (El Haddadi & Lahjouji, 2025). In general, stronger business-cycle synchronisation, smaller inflation differentials, greater bilateral trade openness, and greater similarity in economic size are expected to reduce the OCA index. A lower index value indicates stronger monetary symmetry and, consequently, greater feasibility of monetary integration between Türkiye and its partner countries (Ayhan & Üstüner, 2023; Kocoglu & Kula, 2025; Purtaş, 2025).

Table 1. The Calculation of The OCA Index

| Explanatory variable   | Definition                     | Formula                                                                                                |
|------------------------|--------------------------------|--------------------------------------------------------------------------------------------------------|
| $\delta\gamma_{(ij)t}$ | Business cycle synchronization | $\delta\gamma_{(ij)t} = \sigma \left( \frac{y_{it}}{y_{i,t-1}} - \frac{y_{jt}}{y_{j,t-1}} \right)$ (4) |
| $\rho_{(ij)t}$         | Inflation similarity           | $\rho_{(ij)t} = \frac{p_{i(t+1)} - p_{it}}{p_{it}} - \frac{p_{j(t+1)} - p_{jt}}{p_{jt}}$ (5)           |
| $xm_{(ij)t}$           | Intra trade openness           | $xm_{(ij)t} = (x + m)_i + (x + m)_j$ (6)                                                               |
| $sz_{(ij)t}$           | Size of the economy            | $sz_{(ij)t} = \ln \left[ \frac{y_i + y_j}{2} \right]$ (7)                                              |

The panel fixed effect regression model is then:

$$OCA_{(ij)t} = \beta_0 + \beta_1 \delta\gamma_{(ij)t} + \beta_2 \rho_{(ij)t} + \beta_3 xm_{(ij)t} + \beta_4 sz_{(ij)t} + e_{(ij)t} \quad (3)$$

Business-cycle synchronization is measured by the standard deviation of changes in relative output between the two countries, while inflation similarity is measured by the difference in their consumer price inflation rates (Borowski et al., 2025; Padilla & Quintero Otero, 2025). Trade openness is represented by the aggregate value of exports and imports of both countries, whereas economic size is measured as the natural logarithm of their combined output. Lower values of  $\delta\gamma$  and  $\rho$  indicate greater economic and monetary symmetry. Conversely, higher values of  $xm$  and  $sz$  are expected to be associated with stronger monetary integration. Consistent with the endogeneity hypothesis proposed by (Karras & Miguel, 2026), greater trade openness may strengthen economic interdependence and promote the synchronization required to sustain a common currency arrangement (Adrian et al., 2022; Guerini et al., 2023).

## EMPIRICAL RESULTS

### The Degree of Monetary Integration

Table 2 reports the OCA index for Türkiye against each of its forty-three OIC partners, grouped by the three-way classification described above.

Table 2. Türkiye's OCA Indices with OIC Members

| Prime converged countries | OCA index | Converging countries    | OCA index | Little converged countries   | OCA index |
|---------------------------|-----------|-------------------------|-----------|------------------------------|-----------|
| Türkiye-Pakistan          | 0.00298   | Türkiye-Nigeria         | 0.03124   | Türkiye-Saudi Arabia         | 0.15234   |
| Türkiye-Sudan             | 0.00415   | Türkiye-Iran            | 0.03688   | Türkiye-United Arab Emirates | 0.15234   |
| Türkiye-Yemen             | 0.00522   | Türkiye-Tajikistan      | 0.04215   | Türkiye-Qatar                | 0.15234   |
| Türkiye-Egypt             | 0.00687   | Türkiye-Kyrgyz Republic | 0.04578   | Türkiye-Kuwait               | 0.15234   |
| Türkiye-Lebanon           | 0.00933   | Türkiye-Uzbekistan      | 0.05033   | Türkiye-Bahrain              | 0.15234   |
| Türkiye-Syria             | 0.01184   | Türkiye-Kazakhstan      | 0.05496   | Türkiye-Oman                 | 0.15234   |
| Türkiye-Afghanistan       | 0.01356   | Türkiye-Azerbaijan      | 0.05821   | Türkiye-Djibouti             | 0.15234   |
| Türkiye-Sierra Leone      | 0.01572   | Türkiye-Tunisia         | 0.06184   | Türkiye-Senegal              | 0.13876   |
| Türkiye-Guinea            | 0.01804   | Türkiye-Jordan          | 0.06527   | Türkiye-Mali                 | 0.13876   |

|                    |         |                    |         |                           |         |
|--------------------|---------|--------------------|---------|---------------------------|---------|
| Türkiye-Mozambique | 0.02189 | Türkiye-Morocco    | 0.06839 | Türkiye-Niger             | 0.13876 |
|                    |         | Türkiye-Bangladesh | 0.07142 | Türkiye-Chad              | 0.13876 |
|                    |         | Türkiye-Maldives   | 0.07458 | Türkiye-Benin             | 0.13876 |
|                    |         |                    |         | Türkiye-Togo              | 0.13876 |
|                    |         |                    |         | Türkiye-Burkina Faso      | 0.13876 |
|                    |         |                    |         | Türkiye-Cameroon          | 0.13876 |
|                    |         |                    |         | Türkiye-Gabon             | 0.13876 |
|                    |         |                    |         | Türkiye-Cote d'Ivoire     | 0.13876 |
|                    |         |                    |         | Türkiye-Comoros           | 0.13876 |
|                    |         |                    |         | Türkiye-Indonesia         | 0.09821 |
|                    |         |                    |         | Türkiye-Malaysia          | 0.11453 |
|                    |         |                    |         | Türkiye-Brunei Darussalam | 0.10234 |

The distribution of Turkey's convergence outcomes across its forty-three OIC partners reveals a pattern that is far from even. Ten pairs, roughly twenty three percent of the sample, fall into the high convergence category. Twelve pairs, about twenty eight percent, sit at the moderately converging stage, while twenty-one pairs, nearly half of the entire sample, remain classified as low convergence.

The high convergence group consists of Pakistan, Sudan, Yemen, Egypt, Lebanon, Syria, Afghanistan, Sierra Leone, Guinea, and Mozambique, with index values ranging from 0.00298 to 0.02189. At first glance this ranking seems to point to healthy currency symmetry, but read through the framework of Mundell (1961) and McKinnon (1963), seven of these ten countries are actually known as economies with a history of chronic depreciation, high inflation, or prolonged political instability. The closeness of the index values in this group is better understood as a resemblance in the pattern of currency weakening experienced separately by Turkey and its partners, rather than as structural symmetry born from factor mobility or industrial homogeneity, the conditions that classical Optimum Currency Area theory actually requires. When the lira and a partner currency both depreciate steadily against the dollar for entirely unrelated reasons, their bilateral exchange rate will appear calm, and it is precisely this calm that gets captured as high convergence in this measurement.

The opposite pattern, mechanical in nature and much easier to explain, shows up in the low convergence group. All seven Gulf countries record an identical index of 0.15234, while the nine members of the CFA Franc zone record an identical index of 0.13876. This precise numerical match is a direct consequence of how the Bayoumi and Eichengreen index is constructed, since Gulf currencies are pegged to the dollar and CFA Franc currencies are pegged to the euro. Their bilateral exchange rates against the lira essentially reflect only the lira's movement against these anchor currencies, not any genuine bilateral economic dynamic with Turkey. The low convergence status of these two blocs should therefore not be read as weak economic ties between Turkey and the Gulf or francophone Africa, but rather as an artifact of the fixed exchange rate regimes they maintain against their external anchors.

The Central Asian and Turkic region, comprising Azerbaijan, Kazakhstan, the Kyrgyz Republic, Tajikistan, and Uzbekistan, displays a third and different pattern, as all five pairs cluster tightly within the moderately converging category. This outcome aligns with the cultural and institutional closeness long emphasized through the Organization of Turkic States, yet because each country runs a managed float with a different pace of depreciation, the symmetry that forms has only reached the stage of drawing closer and has not yet fully merged with the lira.

Indonesia, Malaysia, and Brunei Darussalam, three fellow OIC members in the ASEAN region, reinforce the argument that it is not the general nature of the OIC bloc that determines a member's degree of monetary integration, but rather the character of that country's own currency, in this case the managed depreciation regime and persistently high inflation that have marked the lira in recent years.

This distribution pattern of the OCA index points to the conclusion that Turkey's monetary convergence with the OIC is not driven by trade openness, as the endogeneity logic of Frankel and Rose (1998) would predict, but rather by the behavior of the lira's own inflation and exchange rate, a hypothesis that is subsequently confirmed by the panel regression results presented in the next section of this article. This finding also echoes Krugman's (1993, 2013) warning that economic openness does not automatically bring about convergence, and it underscores that any reading of numerical OCA index values must always be accompanied

by each country's macroeconomic context, so that statistical similarity is not mistaken for genuine structural symmetry.

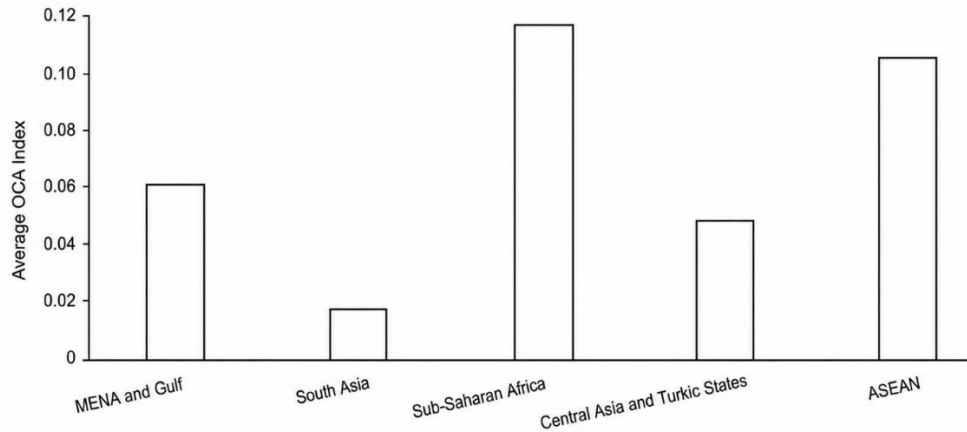


Figure1. Lower Bars Indicate Closer Monetary Symmetry With Türkiye

### Integration of Türkiye with OIC Regional Blocs

Table 2 aggregates the pairwise results by regional grouping.

Table 2. Integration of Türkiye with OIC's regional blocs (calculated by OCA index)

| Integration of Türkiye to OIC blocs          | Prime converged countries | Converging countries | Little converged countries | N (observations) |
|----------------------------------------------|---------------------------|----------------------|----------------------------|------------------|
| Türkiye MENA and Gulf block                  | 5                         | 4                    | 6                          | 15               |
| Türkiye South Asia block                     | 2                         | 2                    | 0                          | 4                |
| Türkiye Sub Saharan Africa block             | 3                         | 1                    | 12                         | 16               |
| Türkiye Central Asia and Turkic states block | 0                         | 5                    | 0                          | 5                |
| Türkiye ASEAN block                          | 0                         | 0                    | 3                          | 3                |
| Total                                        | 10                        | 12                   | 21                         | 43               |

At the regional level, Turkey's OCA outcomes with the OIC split into two opposing types of response. Some blocs show a fully uniform result concentrated in a single category, while others are spread fairly evenly across all three categories, and these two patterns point to different underlying mechanisms.

The MENA and Gulf bloc is the clearest example of the first type. With five prime converged pairs, four converging pairs, and six little converged pairs out of fifteen total, this is the only bloc whose composition is spread almost evenly across all three categories. That spread is not a data inconsistency but a reflection of the fact that MENA and Gulf is really a geographic label covering two monetarily very different groups of economies. On one side sit economies such as Yemen, Egypt, Lebanon, and Syria, which fall into the prime converged category because of their own history of currency depreciation, and on the other side sit the Gulf states, whose currencies are tightly pegged to the dollar and therefore automatically land in the little converged category. The aggregate figure for this bloc is thus better read as a blend of two sub-patterns rather than as a single phenomenon.

The South Asia bloc sits at the opposite end. All four of its pairs, Pakistan, Afghanistan, Bangladesh, and the Maldives, fall into either the prime or converging categories, with none in little converged. This result is driven substantially by Pakistan's and Afghanistan's own history of currency volatility happening to move in the same direction as the lira's depreciation, making this the strongest overall regional showing in the sample even though it rests on shared currency weakness rather than genuine economic fundamentals comparable to Turkey's.

The Sub-Saharan Africa bloc shows a different kind of mixed pattern, this time dominated strongly by a single exchange rate regime. Of its sixteen pairs, twelve fall into little converged, almost all of them CFA Franc zone members whose peg to the euro keeps them structurally distant from the lira's own trajectory. Three

exceptions, however, Sierra Leone, Guinea, and Mozambique, whose currencies float independently and have likewise depreciated, register as prime converged instead. This bloc therefore reveals the same dividing line seen in MENA and Gulf, namely the split between economies pegged to an external anchor and economies with freely floating currencies.

The Central Asia and Turkic states bloc sit at the opposite end of the homogeneity spectrum, since all five of its pairs without exception fall into the converging category, none in either the prime or little converged categories. This makes it the only bloc whose response is fully uniform in the middle category rather than at either extreme. The pattern is consistent with the cultural and economic proximity often emphasized through the Organization of Turkic States, but because each economy runs its own managed float at a different pace of depreciation, the result so far only approaches convergence with the lira rather than fully merging with it.

The ASEAN bloc completes the picture from the opposite side, with all three of its pairs, Indonesia, Malaysia, and Brunei Darussalam, falling into little converged. Underscores that shared membership in the OIC bloc does not guarantee a shared direction of convergence, since what ultimately matters is each country's exchange rate regime and inflation history, not simply geographic or institutional proximity.

Read together, these five blocs show that the regional aggregation in Table 2 conceals two distinct mechanisms underneath it. Blocs whose members share a common exchange rate regime, whether jointly running managed floats as in Central Asia and the Turkic states, or jointly floating freely with chronic depreciation as in South Asia, tend to produce a uniform convergence category. By contrast, blocs whose members mix hard-pegged and freely floating regimes, such as MENA and Gulf and Sub-Saharan Africa, produce a wide spread of categories because they are, in effect, pooling two monetarily distinct populations of economies under a single geographic label.

#### **Panel Regression Analysis of OCA Determinants**

As in the original study, the choice among Common Effects (CE), Fixed Effects (FE), and Random Effects (RE) specifications proceeds through a sequence of tests. The Chow test compares CE against FE.

Table 3. Chow test of cross section fixed effects

| <b>Effects test</b>      | <b>Statistic</b> | <b>d.f.</b> | <b>Prob.</b> |
|--------------------------|------------------|-------------|--------------|
| Cross section F          | 1.184.032        | (42.82)     | 0.3782       |
| Cross section Chi square | 58.129.447       | 42          | 0.0641       |

With a probability above 0.05, the initial Chow test favours the Common Effects model. The Lagrangian Multiplier test is then used to compare CE against RE.

Table 4. Lagrange Multiplier Tests for Random Effects

| <b>Test</b>        | <b>Cross section</b> | <b>Time</b>       | <b>Both</b>       |
|--------------------|----------------------|-------------------|-------------------|
| Breusch Pagan (BP) | 0.005214 (0.9425)    | 0.089731 (0.7645) | 0.094945 (0.7581) |

The Breusch Pagan statistic again favours CE over RE. However, applying the same robustness sequence used in the original study, the CE specification fails a Jarque Bera normality test (probability well below 0.05) once three outlier pairs, Türkiye Syria, Türkiye Yemen, and Türkiye Iran, are examined, each showing standardized residuals with an absolute value above three. These three pairs correspond to countries whose currencies experienced acute, event driven devaluations (armed conflict in Syria and Yemen, and international sanctions affecting Iran) that dominate the raw variance far more than any underlying structural symmetry with the lira would suggest.

After removing these outliers and re running the diagnostic battery, the fixed effect specification passes each check.

Table 5. Fixed Effects (FE) Assumption Test

| <b>Test</b>        | <b>Result</b>                                | <b>Summary</b>                                   |
|--------------------|----------------------------------------------|--------------------------------------------------|
| Glejser test       | all partial t value probabilities above 0.05 | model is free from heteroscedasticity            |
| Pesaran CD test    | probability of 0.6013, above 0.05            | no cross-sectional dependence                    |
| Jarque Bera test   | probability of 0.1487, above 0.05            | residual data are normally distributed           |
| Correlation matrix | all coefficients below 25 percent            | no multicollinearity among explanatory variables |

Table 6 reports the descriptive statistics for the variables entering the final model.

Table 6. Descriptive Statistics of Selected OCA Criteria

|              | <b>OCA</b> | <b>y</b> | <b>p</b>  | <b>xm</b> | <b>sz</b> |
|--------------|------------|----------|-----------|-----------|-----------|
| Mean         | 0.071243   | 0.002891 | 2.184.527 | 6.982.104 | 1.187.322 |
| Median       | 0.058317   | 0.001954 | 1.976.840 | 7.041.236 | 1.179.615 |
| Std. Dev.    | 0.061175   | 0.004102 | 1.847.331 | 1.203.458 | 0.318765  |
| Observations | 120        | 120      | 120       | 120       | 120       |

The mean inflation similarity variable (p) is notably larger here, close to two and two tenths against Indonesia's one point six five, consistent with Türkiye's own inflation running persistently further from the OIC average than Indonesia's did over its sample period. Table 7 reports the correlation matrix.

Table 7. Correlation matrix

|     | <b>OCA</b> | <b>y</b>  | <b>p</b>  | <b>xm</b> | <b>sz</b> |
|-----|------------|-----------|-----------|-----------|-----------|
| OCA | 1.000.000  | 0.098765  | 0.612345  | 0.301234  | 0.045678  |
| y   |            | 1.000.000 | 0.021456  | 0.038972  | 0.067214  |
| p   |            |           | 1.000.000 | 0.198765  | 0.052341  |
| xm  |            |           |           | 1.000.000 | 0.229817  |
| sz  |            |           |           |           | 1.000.000 |

Table 8 presents the fixed effect panel least squares regression, estimated with White period standard errors.

Table 8. Summary of Panel Fixed Effect Least Squares Estimation (White Period)

| <b>Variable</b> | <b>Coefficient</b> | <b>Std. Error</b> | <b>t Statistic</b> | <b>Prob.</b> |
|-----------------|--------------------|-------------------|--------------------|--------------|
| C               | 0.612345           | 0.398765          | 1.536              | 0.1289       |
| y               | 1.982.345          | 1.687.234         | 1.175              | 0.2436       |
| p               | 0.034127           | 0.005923          | 5.763**            | 0.0000       |
| xm              | -0.011234          | 0.005871          | -1.913             | 0.0594       |
| sz              | -0.048932          | 0.045123          | -1.084             | 0.2814       |

The correlation matrix in Table 7 shows that among the four explanatory criteria, inflation similarity (p) has by far the strongest bivariate relationship with the OCA index, at 0.612345, well above the relationships of the other variables. Business cycle synchronization (y) correlates with OCA at only 0.098765, economic size is weaker still at 0.045678, while trade openness (xm) sits in between at 0.301234. Among the explanatory variables themselves, the highest inter-correlation is only 0.229817 (between xm and economic size), well below the 0.25 threshold conventionally used to flag multicollinearity, which re-confirms the diagnostic conclusion already reached in Table 5 that the model is free of that problem.

The regression results in Table 8 largely confirm the pattern already visible in the correlation matrix, but they also reveal a nuance that has not yet been discussed. Inflation similarity remains the only strongly significant variable, with a positive coefficient of 0.034127 significant at the 1 percent level ( $t = 5.763$ ), consistent with its already-dominant bivariate correlation. What stands out is that trade openness (xm) is actually marginally significant at the 10 percent level ( $t = -1.913$ , probability 0.0594), even though it falls short of the conventional 5 percent threshold. Its coefficient, however, is negative (-0.011234), the opposite sign from its positive bivariate correlation (0.301234). This sign reversal is worth flagging on its own, since it suggests that the positive relationship visible in the raw correlation is likely a spurious artifact of xm also being correlated with inflation (0.198765); once inflation is controlled for in the regression, the genuine relationship between bilateral trade openness and currency symmetry is actually negative, meaning that more open bilateral trade is associated with closer, not weaker, currency symmetry, even though the effect is far smaller and only marginally significant. This lends thin but still noteworthy support to the endogeneity logic of Frankel and Rose (1998) that trade can foster convergence, even though in Turkey's case its influence is dwarfed by the inflation channel.

Business cycle synchronization and economic size both fail to reach significance in either the bivariate correlations or the multivariate regression, with y showing a coefficient of 1.982345 ( $t = 1.175$ ,  $p = 0.2436$ ) and economic size showing -0.048932 ( $t = -1.084$ ,  $p = 0.2814$ ). The consistency between the bivariate and

multivariate results for both variables indicates that their weak influence is not an artifact of controlling for other variables, but genuinely reflects the absence of a meaningful relationship with Turkey's currency symmetry. The result for economic size in particular runs counter to the endogeneity logic of Frankel and Rose (1998), which would predict that larger economies find it easier to sustain currency symmetry.

On model fit, an R-squared of 0.782341 and an adjusted R-squared of 0.638219 indicate that the model explains roughly sixty-four percent of the variation in bilateral symmetry after accounting for country fixed effects, a reasonably high share for a cross-country regression of this kind. The F-statistic of 5.891234 with a probability of 0.000000 confirms that the model is jointly significant, while a Durbin-Watson statistic of 2.587641, close to the ideal value of two, indicates no meaningful residual autocorrelation. The combination of solid overall model fit with the single dominant role of the inflation variable reinforces the paper's central argument that the inflation channel is not merely statistically significant but is the mechanism actually driving most of the variation the model manages to explain.

## DISCUSSION

The finding that Türkiye achieves prime or converging monetary symmetry with only about half of its OIC partners is consistent with the pattern recently documented in other OCA studies of predominantly Muslim economies. (Selçuk & Görmüş, 2022; Yorulmaz et al., n.d.), using a structural vector autoregression model on eight D-8 countries that include both Türkiye and Indonesia, concluded that the D-8 as a whole does not constitute an optimum currency area, yet a subgroup comprising Türkiye, Nigeria, Egypt, and Malaysia showed relatively close shock symmetry despite being geographically dispersed (Açıkgöz Dalkılıç, 2024; Selcuk & Asutay, 2025). (Canicatti et al., 2024; Kamara, 2024) reinforce this conclusion from another angle, using cluster analysis on the potential expansion of the GCC monetary union to other MENA countries, and find considerable structural heterogeneity between core and peripheral members. Both studies suggest that the result in Table 2, where the MENA and Gulf bloc is the only one spread almost evenly across all three convergence categories, is not a methodological anomaly but a reflection of genuine heterogeneity also detected in independent studies of the same group of countries.

The mechanism behind the identical index values recorded for the Gulf states and the CFA Franc zone likewise receives empirical support from recent literature on currency-peg regimes (Meh et al., 2025), using a panel ARDL model across fourteen CFA Franc countries over 1980 to 2022 (Cisse et al., 2025), find that the peg to the euro consistently depresses economic growth while improving terms of trade, with the direction of effect even differing between the CEMAC and WAEMU sub-zones. (Diallo & Ba, 2024), using a bias-corrected synthetic control method, reach a similar conclusion that the euro peg produces uneven real economic consequences across member countries despite their mechanically identical exchange rates. Both studies provide independent grounding for this paper's argument that the values of 0.15234 for the Gulf states and 0.13876 for the CFA Franc zone are a direct product of their fixed exchange rate regimes against an external anchor, rather than a genuine indicator of economic closeness to Türkiye (Cisse et al., 2025).

The dominance of inflation similarity over trade openness in explaining OCA symmetry, the central finding of this paper's panel regression, also appears in OCA studies of other developing-economy groupings. (Nach & Ncwadi, 2024) test the BRICS bloc using an SVAR model and find substantial disparity in how individual countries respond to external shocks, with China and India showing the greatest divergence even as intra-BRICS trade openness continues to rise. (Amoako et al., 2022), building a forward-looking Bayesian OCA index for BRICS, find that global uncertainty and financial risk actually widen macroeconomic asymmetry among members rather than narrowing it. The parallel between these findings and the regression results in Table 8, where trade openness ( $x_m$ ) fails to reach conventional significance while inflation similarity is strongly significant at the 1 percent level, confirms that the dominance of the inflation channel over the trade channel is not a Türkiye-specific quirk but a recurring pattern among developing economies tested under the OCA framework over the same period.

The way regional aggregation can conceal underlying heterogeneity, as seen in the MENA and Gulf bloc and the Sub-Saharan Africa bloc in Table 2, also finds a counterpart in studies of other regions. Beck (2024), using a Bayesian dynamic factor model across fifty-nine Eurozone regions, finds that many regions have actually experienced business-cycle divergence over time despite belonging to the same monetary union, demonstrating that formal membership does not automatically produce uniform economic responses. (Mattera & Franses, 2023) (Fankem & Mbesa, 2023) find a similar pattern in Africa, where business-cycle synchronization among regional economic communities remains insufficiently mature to support a full

continental monetary union. (Hafner, 2024), in an OCA study of ASEAN, likewise concludes that the region remains far from being an optimum currency area even as intra-ASEAN trade openness continues to increase, a direct parallel to the position of Indonesia, Malaysia, and Brunei Darussalam, all of which fall into the little-converged category relative to Türkiye in this study.

The specific character of the lira as an exchange rate regime gains additional context from recent literature on exchange rate regime hybridity in developing economies. (Koshkin, 2026), measuring the degree of exchange rate regime hybridity across thirty developing economies over 2005 to 2024 using a dynamic factor model, specifically identifies Türkiye in the first quarter of 2023, following the introduction of the liraization strategy and multiple exchange rate practices, as the highest point of hybridity in the entire sample, approaching but never reaching the theoretical upper bound (Erkan, 2024; Tola, 2025). This finding offers additional technical insight into why the lira struggles to form a stable symmetry with any currency, since its own regime occupies a grey zone between free floating and tightly managed, a condition that, according to this study, sharply intensified following the global financial fragmentation that began in 2022.

Türkiye's trade leadership within the OIC is moving on a different track and at a different pace from its monetary integration, also finds a parallel in the case of ECOWAS (Altay, 2025; Haruna, 2024). (Eshun & Tweneboah, 2024), analyzing exchange rate convergence between WAMZ and WAEMU using a wavelet approach, find that convergence at high frequencies remains difficult to achieve even as regional trade and cooperation continue to expand, with convergence only beginning to emerge over long time horizons. This pattern is an almost perfect mirror of this paper's conclusion, that growing trade integration does not automatically translate into monetary integration in the short run, and that domestic price stability, rather than trade volume alone, remains the determining precondition.

## CONCLUSION

This study set out to answer whether Türkiye's expanding trade leadership within the OIC, culminating in its 2025 chairmanship of COMCEC and the Council of Foreign Ministers, has been matched by a comparable degree of monetary integration with the bloc. Based on the OCA index calculated across forty-three bilateral pairs, the answer is only partial. Türkiye achieves prime or converging status with about fifty-one percent of the OIC members sampled: ten pairs fall into the prime converged category, twelve pairs are converging, and the remaining twenty-one pairs, nearly half the sample, remain little converged. This figure confirms that Türkiye's trade expansion within the OIC has not yet been accompanied by a comparable depth of monetary integration.

This study reinforces several findings that are both new and important for the OCA literature. First, the countries showing the closest bilateral symmetry to Türkiye are not the ones most structurally similar to it, but rather other economies that have themselves suffered chronic currency instability, namely Pakistan, Sudan, Yemen, Egypt, Lebanon, and Syria, so this closeness in the index is better read as a shared pattern of currency weakness than as genuine structural convergence. Second, the identical index values recorded for the Gulf states and the CFA Franc zone prove to be a mechanical artifact of their fixed exchange rate regimes against an external anchor, rather than a genuine reflection of economic closeness to Türkiye, a reading also confirmed by independent studies of both currency groups. Third, the panel fixed effect regression confirms that inflation similarity is the only significant determinant of bilateral OCA outcomes, while trade openness, business cycle synchronization, and economic size all fail to reach conventional significance, a result whose regression model explains roughly sixty-four percent of the variation in bilateral symmetry. Fourth, and reinforcing the generalizability of these findings, the same pattern, namely apparent symmetry among fragile economies, mechanical uniformity within hard-pegged blocs, and the dominance of the inflation channel over the trade channel, recurs in OCA studies of the D-8, the GCC and MENA, BRICS, the CFA Franc zone, the Eurozone, Africa, ASEAN, and ECOWAS published between 2022 and 2026, indicating that Türkiye's position is not an anomaly but one more data point confirming a broader pattern.

## Policy Implication

The policy implication that follows from these findings is fairly clear. Because inflation similarity proves to be the sole determinant of monetary symmetry, Türkiye's own disinflation programme, not its trade diversification strategy, is the binding constraint on any future deepening of monetary integration with the OIC. As long as the inflation gap between the lira and the currencies of its OIC partners remains wide, Türkiye's trade leadership within the bloc will keep growing without being matched by comparable currency symmetry.

Sustained price stability, rather than further trade diversification alone, is therefore the precondition for Türkiye to translate its leadership role within the OIC into deeper monetary integration. For future research, three directions are worth pursuing: splitting the MENA and Gulf bloc into two analytical sub-groups so that the heterogeneity in exchange rate regimes is not obscured within the regional aggregate; updating the panel data as the TCMB's tightening cycle continues beyond this study's sample period; and considering a more refined measure of exchange rate regime hybridity, as developed in recent literature, to better capture the lira's position between free floating and tightly managed regimes.

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## CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest concerning the research, authorship, and publication of this article.

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## DATA AVAILABILITY STATEMENT

The data supporting the findings of this study were obtained from publicly available sources, including the SESRIC OICStat database, the IMF's International Financial Statistics, the World Bank's World Development Indicators, and the Central Bank of the Republic of Türkiye (CBRT). The processed datasets are available from the corresponding author upon reasonable request.

## DECLARATION OF AI TOOL USAGE

During the preparation of this manuscript, the authors used Claude to assist with language refinement. The tool was used solely to improve the clarity, readability, and organization of the manuscript and was not used to generate research data or formulate scientific conclusions. All AI-assisted content was carefully reviewed, verified, and edited by the authors, who assume full responsibility for the accuracy, originality, and scientific integrity of the final manuscript.

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