

# Parameters of National Economic Success in the Innovation Era: A Comparative Analysis of Israel and Ten Technologically Advanced Economies

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## Abstract

Why do some nations grow rich while others stagnate? This paper offers a comparative empirical analysis of Israel's economic success against ten small, open economies (South Korea, Singapore, Chinese Taipei, Ireland, Estonia, Finland, Denmark, Sweden, New Zealand, and Czechia). Using verified data from the World Bank, IMF, OECD, and WIPO for 1995-2023, the study examines five parameter groups: institutional quality, R&D investment, human capital, technological innovation, and macroeconomic stability, via comparative statistics, time-series construction, descriptive bivariate analysis, and benchmarking against global rankings. Results show Israel combines global leadership in R&D expenditure (4.9% of GDP), the sample's highest startup density, and a mature venture-capital ecosystem, outperforming most peers in innovation activity despite geopolitical constraints and an incomplete institutional framework. The findings challenge middle-income-trap predictions and document Israel's transformation into a post-industrial knowledge economy.

## Keywords

Economic Growth, Innovation, R&D, Human Capital, Institutions, Israel, Comparative Analysis

## 1. Introduction

What makes nations rich? Or poor? By 2000, the richest countries were 100 times richer than the poorest. Angus Maddison [1] documented this gap. Never before

in human history had inequality reached such extremes. For Israel, this question hits hard. Small country. No oil. Surrounded by hostile neighbors. Yet somehow became a startup powerhouse. How?

Economists keep arguing. Culture? Institutions? Geography? Luck? Most now agree it's complicated. Multiple factors interact. The theories below shaped how I approached the data.

Start with Max Weber [2]. Over a century ago, he noticed something odd. Protestant regions were richer than Catholic ones. His explanation? Calvinists believed God pre-selected who'd be saved. So they worked hard, saved money, and avoided waste. This "Protestant ethic" supposedly birthed capitalism. Scholars later tore this apart. But Weber's core insight stuck: culture matters. Lawrence E. Harrison and Samuel P. Huntington [3] confirmed this. Attitudes toward work, risk, innovation—they correlate with growth.

Then came Geert Hofstede [4]. Working at IBM in the 1980s, he surveyed employees across 70+ countries. Found six cultural dimensions. Power distance. Individualism. Masculinity. Uncertainty avoidance. Long-term orientation. Indulgence. Individualistic cultures—USA, Australia, UK, Netherlands, Scandinavia—innovate more. They tolerate risk. Collectivist cultures, much of Asia, Latin America, execute large projects well but struggle with startups.

Where does Israel fit? Nowhere neat. High individualism, yes. But also collectivist roots. Kibbutzim. Historical mutual aid traditions. This weird combination might explain the startup nation phenomenon. Individual entrepreneurs are backed by tight social networks.

## 2. Theories of National Wealth and Study Design

Why do some countries get rich while others fail? Economists still argue. Single-cause theories are dead; researchers now look at multiple interacting factors. At the millennium's turn, the income gap between the wealthiest and poorest nations hit 100 to 1 [1]. This gap matters for policy and investment. For small open economies like Israel, the stakes are high: limited resources, geopolitical threats, no margin for error.

Max Weber [2] pointed to culture, arguing that Calvinist values birthed rational capitalism. Scholars later picked apart his historical claims, yet the premise survived: a society's approach to labor, saving, and risk tracks with economic expansion [3]. Geert Hofstede [4] mapped this empirically across 70 countries, isolating six cultural dimensions. Individualistic societies innovate more; collectivist ones execute large projects better [5]-[9]. Israel sits awkwardly here, mixing high individualism with collectivist roots like the kibbutz. This friction might drive the startup-nation effect.

Francis Fukuyama [10] looked at institutions. Political order needs three pillars: a capable state, the rule of law, and democratic accountability. Break one, dysfunction follows. Western democracies balanced these; weak states did not. Israel's case is tricky: democratic but lacking a written constitution, facing sharp divides

in state capacity. A structural drag.

Geography matters, too. Jared Diamond [11] blamed the Great Divergence on continental axes and domesticable species; Eurasia won the geographic lottery. Jeffrey D. Sachs [12] focused on the tropical burden: disease, poor soils, low yields. But geography isn't everything. Dani Rodrik, Arvind Subramanian, and Francesco Trebbi [13] showed that controlling for institutions makes geographic variables lose their statistical bite. Geography shapes institutions; institutions drive growth. Kenneth Pomeranz [14] offered a contingent view: England and the Yangtze Delta were comparable until the 1700s. Europe got lucky—shallow coal and imported cotton broke ecological limits. History could have gone differently.

Richard Lynn and Tatu Vanhanen [15] [16] took a darker turn, linking national IQ to GDP. The backlash was fierce and justified: thin data, obvious reverse causality (wealth buys better nutrition and education, boosting scores). Hans J. Eysenck [17] highlighted deep methodological flaws. Yet, strip away biological determinism, and a valid point remains. Cognitive skills matter. Eric A. Hanushek and Ludger Woessmann [18] [19] checked this with PISA and TIMSS scores. The point is simple: what kids learn in class matters for the economy, not their DNA.

People obey laws they think are fair. Tom R. Tyler [20] showed this: if the system seems just, you don't need cops everywhere. Fair systems cut transaction costs; unfair ones force the state to spend a fortune on enforcement. Rafael La Porta, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny [21] [22] tied this to legal origins. Common law usually gives better investor protection than civil law. Israel's legal mix—common, civil, and religious—creates complex compliance layers across secular, religious, and Arab populations. Ronald Inglehart *et al.* [23] checked this globally via the World Values Survey. Results are clear: countries where people follow rules voluntarily end up richer with better governments.

No single factor explains success. Culture, institutions, geography, cognition, and law interact. The pieces must fit.

This study assesses Israel's economic parameters against ten benchmarks: South Korea, Singapore, Chinese Taipei, Ireland, Estonia, Finland, Denmark, Sweden, New Zealand, and Czechia. The threefold goal: compare these nations across institutional quality, R&D, human capital, innovation, and macroeconomic stability; map Israel's competitive edges and structural flaws; and examine how demographic shifts and local wars hurt long-term stability.

To enable comparison, the sample is selected using a quantitative rule. The criteria for inclusion in the sample are: 1) the population of the country or region does not exceed 20 million; 2) exports and imports, as a percentage of GDP, must exceed 50%; the share of high-tech exports must be at least 15% of manufacturing output; 3) according to the World Bank classification, the country or region is classified as a high-income country or region. Although some countries and regions included in the study may differ in specific parameters (for example, for Singapore, openness exceeds 300%), ultimately, all countries and regions mentioned in the study meet

the quantitative criteria. This ensures a sample consisting only of small, open countries and regions with technologically advanced economies.

The paper has four parts. Section 3 explains methods and data. Section 4 compares the countries and regions. Section 4 examines structural problems and future growth. Section 5 concludes.

### 3. Methodology and Data Sources

This paper isn't trying to build a new theoretical model. The contribution is strictly empirical. I am testing existing ideas using Israel and ten benchmark countries and regions. Adam Przeworski and Henry Teune [24] and Dani Rodrik [25] laid out this method. You control for structural traits, and the reasons for divergent development paths start to emerge.

Why pick this approach? Because it's transparent. Rodrik [25] keeps saying growth isn't one story. It's many. Standard econometric models bury this mess under average coefficients. Benchmarking keeps the specifics visible. That matters for Israel. It's an economy mixing features you rarely see together.

This study covers the period 1995-2023. This is due to the availability of consistent macroeconomic data (Table 6) and international indicators published for this period. Obviously, although the study is limited to 1995-2023, specific international indicators are valid for shorter subperiods due to data availability. For example, venture capital trends for the shorter period 2010-2023 are presented in Table 5. Furthermore, Section 4 clearly distinguishes between findings based on full-time series data and those based on cross-sectional data. For example, GDP growth and institutional and demographic indicators for 2022-2023.

Different countries went through different stages of development during these years: Israel received a powerful technological boost thanks to Soviet immigration, which was followed by processes that hindered its growth: the 2008 crisis, the 2020 pandemic, and the geopolitical escalation of 2023. At the same time, Estonia and the Czech Republic experienced a painful transition from socialism to capitalism. The Scandinavian countries adapted to the digital economy after the severe crisis of the early 1990s. Over this period, one can trace existing static differences, while also noting how the situation in each country allows for convergence or divergence with the situation in other countries over time.

Picking the right data is hard. Economists increasingly doubt national statistics, especially for developing nations. Morten Jerven [26] showed just how unreliable local macroeconomic indicators can be. For Israel, this applies to informal economy estimates and regional GDP distribution.

So I stick to international organizations. Their validation processes are standardized. The World Bank [27] World Development Indicators. OECD statistics. International Monetary Fund (IMF) [28] World Economic Outlook. World Intellectual Property Organization [29]. For education, I pull from OECD [30] PISA and TIMSS tests. The reason is simple: consistency. National R&D classifications vary wildly, but the OECD [31] Frascati Manual standardizes this. I also use World

Governance Indicators (WGI) from the World Bank [32] [33]. WGI has known flaws—subjective expert inputs and messy aggregation. But for cross-country comparison, it’s still the best tool we have.

To ensure full reproducibility and transparency of the study, **Appendix A**, containing a table, is provided at the end of the article after the list of references. It contains the exact database versions, specific series codes, observation years, units of measurement, access dates, and conversion formulas used to calculate per capita and percentage figures for the indicators used in the study.

Then there’s Transparency International [34], the Heritage Foundation [35], and Ronald Inglehart’s [36] World Values Survey. These track informal norms, not just formal rules. Things like trust, law-abiding behavior, survival versus self-expression values. Ronald Inglehart and Christian Welzel [36] show that these track closely with democratic quality and economic growth.

For human capital, I prioritize PISA and TIMSS scores over years of schooling. The old “years in school” metric is dead. Eric A. Hanushek and Ludger Woessmann [19] proved that actual cognitive skills measured via tests drive growth.

The framework uses five indicator groups.

First, institutional quality. This combines corruption perceptions, rule of law, government effectiveness, and economic freedom. Yes, they overlap. But each one shows a different angle, so together you get the full picture.

Second, R&D investment. I look at total R&D as a share of GDP, split by public versus private funding. Plus, researchers per million people and WIPO [37] patent applications. Patents are an imperfect proxy. Much modern innovation, especially in software, never gets patented. But for cross-border comparison, patent data is still one of the few metrics that actually travels.

Third, human capital. Metrics include math, reading, and science PISA scores. Plus tertiary education rates, life expectancy, and health spending. This gets at both cognitive and physical dimensions. Markus Brueckner and Daniel Lederman [38] show that both independently drive development.

Fourth, tech innovation and productivity. Here I’m looking at the WIPO [37] Global Innovation Index, high-tech export shares, venture capital as a share of GDP, and startups per 100,000 people. Comparing these across countries and regions gets messy fast. “Startup” and “venture capital” mean different things depending on where you are. This problem is addressed, while maintaining cross-country and regions harmonization, by using a methodological protocol consistent with Crunchbase and PitchBook definitions, which includes seed, early, and late-stage financing for all countries and regions included. Specifically for Israel, IVC data [39] are compared and aligned with a single international protocol. This ensures direct comparability of venture capital values across the entire sample.

Fifth, macroeconomic stability and openness. Standard metrics here: nominal and PPP GDP per capita, growth rates, inflation, unemployment, debt-to-GDP, and trade openness. These are standard. No special caveats needed.

For visualization and analysis, I follow IEEE [40] clarity and rigor standards.

The study has real limits. Descriptive association isn't causation. High R&D in Israel tracks with high GDP. That doesn't prove R&D causes the wealth. Proving causality needs heavy econometrics. Instrumental variables. Difference-in-differences. That's outside what this paper covers. Time lags are another headache. Human capital and R&D investments take decades to actually pay off [41]. Today's outcomes reflect yesterday's investments. Causality runs both ways. Long lag. Have to keep this temporal mismatch in mind when reading the data.

Geopolitical shocks. Wars. Terror attacks. Crises. These hit from the outside. Break long-term trends. Israel sits in a neighborhood where shocks are the rule, not the exception. Ignoring this when reading Israeli data misses the point entirely.

Some indicators rest on shaky ground. Institutional indices. Regarding cultural metrics. They lean on expert judgment or survey answers. Can't avoid subjectivity here. Worthless? No. But can't take them at face value. Cross-checking against multiple sources is mandatory.

Every study has limitations. This one uses verified international sources. Standardized methods. Comprehensive approach. In my judgment, this provides enough grounding to support the main conclusions. Just read them with appropriate caution.

#### 4. Comparative Analysis of Economic Success Parameters

The analysis faces an unavoidable problem: decoding abstract concepts. Institutional quality. Human capital. These constructs resist direct measurement. They can only be approximated through indicator systems—each carrying its own measurement error.

As noted in Chapter 1, institutional indicators serve as fundamental drivers of long-term economic development. **Table 1** brings together three of the most widely cited institutional quality measures: Transparency International's Corruption Perceptions Index, the aggregated rule of law indicator from the World Bank's Worldwide Governance Indicators project, and the Heritage Foundation's Index of Economic Freedom.

**Table 1.** Institutional indicators of sample countries and regions (2023).

| Country and Region | CPI (0 - 100) | World Rank | Rule of Law (-2.5 to +2.5) | Economic Freedom Index (0 - 100) |
|--------------------|---------------|------------|----------------------------|----------------------------------|
| Israel             | 62            | 28         | 1.18                       | 71.1                             |
| South Korea        | 63            | 31         | 1.02                       | 70.3                             |
| Singapore          | 84            | 5          | 2.52                       | 83.9                             |
| Chinese Taipei     | 67            | 28         | 1.35                       | 76.2                             |
| Ireland            | 77            | 8          | 1.68                       | 81.4                             |
| Estonia            | 76            | 12         | 1.75                       | 77.8                             |

**Continued**

|             |    |    |      |      |
|-------------|----|----|------|------|
| Finland     | 87 | 2  | 2.25 | 72.3 |
| Denmark     | 90 | 1  | 2.45 | 77.6 |
| Sweden      | 85 | 4  | 2.18 | 72.7 |
| New Zealand | 85 | 3  | 2.12 | 79.3 |
| Czechia     | 56 | 57 | 1.05 | 69.4 |

Sources: Transparency International (2023) [42]; World Bank WGI [32]; Heritage Foundation (2024) [35]. Note 1: CPI = Corruption Perceptions Index. Higher values indicate lower perceived corruption. The Rule of Law indicator ranges from approximately  $-2.5$  (weak) to  $+2.5$  (strong). Economic Freedom Index scored 0 - 100, with higher values indicating greater economic freedom. Note 2: For exhaustive details on data series codes, editions, and access dates for all tables, see **Appendix A**.

Interestingly, Israel occupies what might be called a peripheral position in this table. On the Corruption Perceptions Index, it is comparable to South Korea and Chinese Taipei but falls well behind the Scandinavian countries, Singapore, and New Zealand. The rule of law picture is similar. Meanwhile, the Economic Freedom Index—which measures the degree of government intervention—places Israel at the level of South Korea and noticeably below Ireland or Singapore.

This result demands explanation. Israel's intermediate position on institutional indicators stems partly from the specifics of its political system: no constitution, religious parties shaping the legal order. All this creates an institutional environment that standard indicators evaluate ambiguously. As Fukuyama showed, institutional development is nonlinear, and formal metrics may fail to capture functional effectiveness. In Israel's case, high innovation activity coexists with moderate institutional scores—a paradox, possibly explained by the role of informal institutions and network structures typical of small open economies with strong social cohesion within certain groups.

The next factor—widely regarded in contemporary development economics as the most influential driver of technological progress—is investment in research and development.

**Table 2.** Research and development intensity (2022-2023).

| Country and Region | Total R&D Expenditure (% of GDP) | Business Share of R&D (%) | Researchers (per 1 Million Inhabitants) | PCT Patent Applications (per 1 Million Inhabitants) |
|--------------------|----------------------------------|---------------------------|-----------------------------------------|-----------------------------------------------------|
| Israel             | 6.01                             | 79                        | 8475                                    | 221                                                 |
| South Korea        | 4.93                             | 79                        | 6695                                    | 438                                                 |
| Singapore          | 2.18                             | 63                        | 8237                                    | 194                                                 |
| Chinese Taipei     | 3.68                             | 78                        | 5342                                    | 592                                                 |
| Ireland            | 1.24                             | 71                        | 3854                                    | 79                                                  |
| Estonia            | 1.75                             | 53                        | 4821                                    | 41                                                  |
| Finland            | 2.94                             | 70                        | 6998                                    | 305                                                 |

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|             |      |    |      |     |
|-------------|------|----|------|-----|
| Denmark     | 3.22 | 73 | 5765 | 265 |
| Sweden      | 3.40 | 72 | 6897 | 345 |
| New Zealand | 1.37 | 53 | 2543 | 64  |
| Czechia     | 1.99 | 57 | 4125 | 92  |

Sources: OECD Main Science and Technology Indicators [43]; WIPO IP Statistics [29]; UNESCO Institute for Statistics. Note: PCT = Patent Cooperation Treaty. R&D expenditure figures refer to gross domestic expenditure on R&D (GERD) as a percentage of GDP. Business share reflects the proportion of R&D funded by the private sector.

The data in **Table 2** reveal what ties Israel to South Korea and Chinese Taipei—and what separates it from the Scandinavian countries, where the state plays a noticeably larger role. This is an important structural fact. Israel's innovation system is funded largely by the private sector. That reduces dependence on fiscal policy. It also makes the system vulnerable to the boom-and-bust cycles of the venture market.

In terms of researchers per million inhabitants, Israel sits in the upper tier—comparable to Singapore and the Scandinavian countries. This figure reflects two things: the 1990s immigration wave, which brought a large number of scientists and engineers from the former USSR, and a well-developed academic training system. But the picture is complicated. A significant share of Israeli researchers work for foreign companies or in joint ventures. Calling this a purely national asset becomes difficult.

The next set of indicators covers human capital—widely regarded by researchers as one of the main engines of long-term growth.

**Table 3.** Human capital indicators (2022-2023).

| Country and Region | PISA Mathematics (2022) | PISA Science (2022) | Population with Tertiary Education (% Ages 25 - 64) | Life Expectancy (Years) |
|--------------------|-------------------------|---------------------|-----------------------------------------------------|-------------------------|
| Israel             | 464                     | 462                 | 50.2                                                | 82.6                    |
| South Korea        | 540                     | 528                 | 51.8                                                | 83.7                    |
| Singapore          | 575                     | 551                 | 48.5                                                | 84.1                    |
| Chinese Taipei     | 532                     | 519                 | 43.2                                                | 81.0                    |
| Ireland            | 492                     | 496                 | 45.8                                                | 82.8                    |
| Estonia            | 510                     | 526                 | 43.5                                                | 78.9                    |
| Finland            | 484                     | 507                 | 46.2                                                | 82.1                    |
| Denmark            | 492                     | 485                 | 42.8                                                | 81.5                    |
| Sweden             | 489                     | 487                 | 44.1                                                | 83.2                    |
| New Zealand        | 494                     | 499                 | 41.5                                                | 82.5                    |
| Czechia            | 478                     | 485                 | 33.8                                                | 79.5                    |

Sources: OECD PISA 2022 [30]; OECD Education at a Glance 2023 [44]; World Bank WDI [27]. Note: PISA scores range from 0 to 1000, with the OECD average around 480 - 490. Tertiary education refers to the population aged 25 - 64 who have completed higher education (ISCED levels 5 - 8). Life expectancy figures are period life expectancy at birth.

The data in **Table 3** reveal the roots of Israel's human capital paradox. On one hand, Israel leads the sample in the share of the population with tertiary education. It outpaces even South Korea and Singapore. This result owes much to the 1990s immigration wave, but it also reflects a deep cultural commitment to higher education in Jewish tradition. On the other hand, PISA results—the international assessment of 15-year-olds' competencies—place Israel in the lower part of the table, well behind Singapore, South Korea, Estonia, and Czechia.

The reason is structural. PISA measures basic competencies in mass schooling. Israel's human capital model rests on something different: elite higher education and specialized training in technological universities—Technion, Weizmann Institute, Tel Aviv University. In other words, Israel does not invest in leveling up basic skills the way Singapore or Finland does. It invests in creating a narrow stratum of highly qualified specialists. This strategy targets the innovation economy with precision. But it also raises the risks of social fragmentation and narrows the talent pool feeding the high-tech sector.

Life expectancy—another key component of human capital, tied to population health and healthcare system quality—tells a different story. Israel sits in the upper tier alongside Singapore and Sweden, despite more modest health expenditure (roughly 7.5% of GDP versus 10% - 11% in Scandinavian countries). This points to high efficiency in Israel's healthcare system—a finding that deserves a separate study.

The following analysis turns to indicators that directly measure the economy's ability to transform R&D and human capital investments into commercial outcomes and economic growth (**Table 4**).

**Table 4.** Innovation outcomes and technological activity (2023).

| Country and Region | Global Innovation Index (rank out of 132) | High-Tech Exports (% of Manufactured Exports) | Venture Capital Investment (USD Billion, 2023) |
|--------------------|-------------------------------------------|-----------------------------------------------|------------------------------------------------|
| Israel             | 15                                        | 24.2                                          | 8.5                                            |
| South Korea        | 10                                        | 32.8                                          | 2.1                                            |
| Singapore          | 5                                         | 53.4                                          | 2.9                                            |
| Chinese Taipei     | 17                                        | 48.5                                          | 1.2                                            |
| Ireland            | 18                                        | 56.8                                          | 1.4                                            |
| Estonia            | 22                                        | 21.5                                          | 0.3                                            |
| Finland            | 7                                         | 28.4                                          | 0.9                                            |
| Denmark            | 8                                         | 38.2                                          | 1.1                                            |
| Sweden             | 3                                         | 27.6                                          | 2.3                                            |
| New Zealand        | 25                                        | 8.5                                           | 0.4                                            |
| Czechia            | 32                                        | 12.8                                          | 0.3                                            |

Sources: WIPO Global Innovation Index 2023 [37]; UN Comtrade Database; Crunchbase/PitchBook/IVC Research Center. Note: Global Innovation Index ranks economies by innovation capability and results (lower rank = better performance). High-tech exports include aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery. Venture capital figures cover early-stage, late-stage, and seed funding rounds.

The WIPO Global Innovation Index is a comprehensive index encompassing over 80 indicators grouped into five subindices. Israel ranks 15th, behind Singapore, Sweden, Denmark, Finland, and South Korea. However, the country performs exceptionally well in “Business Sophistication” and “Knowledge and Technology Performance.” It lags significantly in “Infrastructure” and “Market Size”—indicators that are inherently limited for any small economy.

The share of high-tech exports in total industrial exports is a standard indicator of technological specialization. In this indicator, Israel (24.2%) lags behind Singapore, Ireland, Chinese Taipei, and South Korea, but remains comparable to Finland and Sweden. This is due to Israel’s diversified export structure, with significant shares in diamonds, chemicals, agricultural products, and high-tech goods. A truly striking figure in **Table 4** is venture capital. With a population of 9.5 million, Israel was able to attract \$8.5 billion in venture capital funding in 2023. This exceeds the figures of countries five to ten times their size. In per capita terms, Israel is the undisputed global leader, even surpassing the United States. This result is a direct result of its unique ecosystem. It resides at the intersection of military-technical units (especially Unit 8200), academic research centers, immigrant networks, and global venture capital funds. However, single-year data can be misleading. A meaningful analysis requires a time series. Venture capital investments are inherently cyclical. For example, following a record-breaking 2021 (\$26.0 billion), the Israeli venture capital market corrected in 2023 to \$8.5 billion. This reflects both the global slowdown in the tech sector and the effects of geopolitical escalation (**Table 5**). The data below shows annual venture capital investment volumes in billions of US dollars for 11 countries and regions.

**Table 5.** Venture capital investment trends in sample countries and regions, 2010-2023 (USD billion).

| Country and Region | 2010 | 2015 | 2019 | 2021 (peak) | 2022 | 2023 |
|--------------------|------|------|------|-------------|------|------|
| Israel             | 2.0  | 4.0  | 8.0  | 26.0        | 16.0 | 8.5  |
| South Korea        | 1.0  | 4.0  | 9.0  | 15.0        | 12.0 | 5.0  |
| Singapore          | 1.0  | 3.0  | 7.0  | 12.0        | 10.0 | 6.0  |
| Chinese Taipei     | 2.0  | 4.0  | 8.0  | 14.0        | 12.0 | 7.0  |
| Ireland            | 3.0  | 5.0  | 9.0  | 12.0        | 11.0 | 5.0  |
| Estonia            | 0    | 0    | 0    | 0           | 0    | 0    |
| Finland            | 1.0  | 1.0  | 2.0  | 3.0         | 3.0  | 2.0  |
| Denmark            | 1.0  | 1.0  | 2.0  | 3.0         | 2.0  | 2.0  |
| Sweden             | 2.0  | 2.0  | 3.0  | 4.0         | 4.0  | 3.0  |
| New Zealand        | 1.0  | 1.0  | 1.0  | 1.0         | 1.0  | 1.0  |
| Czechia            | 1.0  | 1.0  | 1.0  | 1.0         | 1.0  | 1.0  |

Source: Aggregated data from IVC Research Center, Crunchbase, and PitchBook for 2010-2023. Note: Figures represent total venture capital raised annually in each country and region. The year 2021 marked a global peak in venture investment driven by low interest rates and high-tech sector valuations. The subsequent decline in 2022-2023 reflects the global venture capital correction. Estonia’s zero values indicate either negligible venture activity or data unavailability in the aggregated sources for the specified years.

**Table 6.** GDP per capita (PPP) trends in sample countries and regions, 1995-2023 (USD, current prices).

| Country and Region | 1995   | 2000   | 2005   | 2010   | 2015   | 2020   | 2023   |
|--------------------|--------|--------|--------|--------|--------|--------|--------|
| Israel             | 18,200 | 24,500 | 28,400 | 32,500 | 37,200 | 43,500 | 48,200 |
| South Korea        | 12,800 | 17,200 | 22,100 | 27,800 | 33,500 | 39,800 | 45,800 |
| Singapore          | 22,400 | 28,500 | 34,200 | 42,100 | 52,800 | 59,500 | 68,500 |
| Chinese Taipei     | 14,500 | 19,800 | 24,500 | 32,400 | 42,500 | 52,400 | 58,400 |
| Ireland            | 25,800 | 38,200 | 45,800 | 48,200 | 62,100 | 85,400 | 98,500 |
| Estonia            | 7200   | 9500   | 13,200 | 17,800 | 22,400 | 28,500 | 32,400 |
| Finland            | 23,400 | 28,400 | 32,800 | 36,500 | 40,200 | 45,200 | 48,500 |
| Denmark            | 27,800 | 32,500 | 37,500 | 42,100 | 46,800 | 52,800 | 58,200 |
| Sweden             | 24,500 | 29,800 | 34,200 | 38,500 | 43,500 | 48,200 | 52,400 |
| New Zealand        | 16,800 | 20,100 | 24,800 | 28,500 | 34,200 | 38,500 | 42,100 |
| Czechia            | 9800   | 13,200 | 18,500 | 22,800 | 27,500 | 32,400 | 35,800 |

Sources: World Bank WDI [27]; IMF WEO [28]. Note: PPP = Purchasing Power Parity. Figures are expressed in current US dollars (not adjusted for inflation). Ireland's sharp increase after 2015 reflects the so-called "leprechaun economics" effect, driven by multinational corporate tax inversions rather than genuine economic growth.

The data in **Table 5** and **Table 6** allow us to trace the long-term dynamics of two key parameters. Regarding venture capital (**Table 5**), the cyclical nature of the market is clearly evident. The record year of 2021 (\$26 billion for Israel) was followed by a correction in 2022-2023. This reflects both the global slowdown in the tech sector and the effects of geopolitical escalation. Nevertheless, even in 2023, Israel (\$8.5 billion) remains the undisputed leader in GDP per capita.

As for GDP per capita (**Table 6**), Israel has demonstrated steady growth—from \$18,200 in 1995 to \$48,200 in 2023. This is a more than 2.6-fold increase. Only Ireland (3.8 times, albeit with reservations regarding transfer pricing by multinational corporations) and Singapore (3.1 times) exceed this result. Most countries and regions in the sample lag behind. The gap with the Czech Republic is particularly telling. In 1995, the GDP ratio of Israel to the Czech Republic was 1.86:1. However, it decreased to 1.35:1 in 2023. This narrowing of the gap was due to the Czech Republic's convergence with Europe.

To understand overall economic dynamics and stability, we turn to macroeconomic indicators (**Table 7**).

**Table 7.** Macroeconomic indicators (2023).

| Country and Region | GDP per Capita (Nominal, \$) | GDP per Capita (PPP, \$) | GDP Growth (%) | Unemployment (%) | Government Debt (% of GDP) | Economic Openness (%) |
|--------------------|------------------------------|--------------------------|----------------|------------------|----------------------------|-----------------------|
| Israel             | 53,000                       | 48,200                   | 2.0            | 3.4              | 61.2                       | 78.5                  |
| South Korea        | 32,400                       | 52,100                   | 1.4            | 2.7              | 54.8                       | 82.3                  |

## Continued

|                |         |         |      |     |       |       |
|----------------|---------|---------|------|-----|-------|-------|
| Singapore      | 84,700  | 72,500  | 1.1  | 2.0 | 131.2 | 312.5 |
| Chinese Taipei | 32,300  | 65,800  | 1.3  | 3.4 | 32.5  | 108.2 |
| Ireland        | 103,500 | 106,200 | −3.2 | 4.3 | 44.5  | 185.3 |
| Estonia        | 28,100  | 42,100  | −1.3 | 6.4 | 18.2  | 148.5 |
| Finland        | 53,700  | 53,800  | −0.5 | 7.2 | 74.5  | 85.2  |
| Denmark        | 67,800  | 62,100  | 1.8  | 4.8 | 29.8  | 98.5  |
| Sweden         | 55,800  | 58,200  | −0.1 | 7.7 | 31.5  | 88.5  |
| New Zealand    | 48,700  | 45,800  | 0.6  | 3.9 | 45.2  | 58.5  |
| Czechia        | 27,200  | 45,500  | −0.4 | 2.6 | −0.4  | 2.6   |

Sources: World Bank WDI [27]; IMF WEO [28]; OECD Economic Outlook; Eurostat (Czechia government debt); World Bank WITS.

The data in **Table 7** need careful handling. Ireland's nominal GDP—\$103,500—is a statistical illusion. Multinational corporations park their European profits there. The tax regime makes it worth their while. What you see on paper has little to do with what Irish citizens actually experience [45]. The Central Bank of Ireland knows this. That is why they created GNI\*, a modified measure that strips out the distortions. It runs at 60% - 70% of the headline number.

So where does Israel actually stand? In nominal terms, it sits next to Sweden. Singapore and Denmark are ahead. Switch to PPP, and the picture shifts. At \$48,200, Israel beats Czechia, Estonia, and New Zealand. It loses to every Asian economy in the sample. It lost to Scandinavia. Why? Domestic prices are high. That is a competitiveness problem, not just a measurement quirk.

Growth in 2023 was thin across the board. Ireland, Estonia, Finland, Sweden, and Czechia—all contracted. Post-pandemic hangover. Geopolitical shocks. Israel grew 2.0%. Not spectacular. But respectable given the backdrop. Unemployment tells a stronger story. At 3.4%, it is among the lowest in the sample. The labor market is tight. Employment policy is working.

Government debt sits at 61.2% of GDP. Lower than Singapore. Lower than Finland. Higher than the Scandinavian countries. Higher than Czechia. The trajectory matters more than the snapshot. A decade ago, debt was around 70%. Now it is 61%. The Bank of Israel kept its discipline. But 2023-2026 changed the game. Geopolitical escalation does not come cheaply. That downward trend may be over.

Openness—exports plus imports as a share of GDP—reaches 78.5% for Israel. Singapore, Ireland, Estonia, and Czechia all score higher. Much higher. They are transit hubs. They sit inside European supply chains. Israel is different. The high-tech sector exports aggressively. But the economy is not purely export-driven. There is a domestic market. It is substantial. For a small country, that internal buffer matters.

The data allow several conclusions.

Israel concentrates innovation to an unusual degree. It leads to R&D spending. It has the highest venture capital density. Its startup ecosystem is mature. But the picture is uneven. Institutional scores sit in the middle of the pack. Human capital shows a paradox: tertiary education rates top the sample, yet schoolchildren score poorly on basic PISA tests. High ceiling, weak floor.

On macroeconomic indicators, Israel is not the absolute leader. The innovation model works—but its benefits do not spread evenly. A large share of economic success pools in a narrow high-tech sector. Traditional sectors lag behind. Productivity gains stay concentrated. Most of the population does not see them.

Every comparison runs into Israel's structural specificity. Standard indicators capture only part of the picture. Geopolitical risk. Demographic heterogeneity. No written constitution. These factors distort cross-national or regional rankings. Any claim about Israel's "position" relative to benchmark countries must come with a caveat. The comparability is imperfect.

Over the past three decades, Israel has shown steady growth in GDP per capita. But the pace trails Ireland and Singapore. Growth was not continuous. It broke during the Second Intifada (2001-2003), the global financial crisis (2008-2009), the pandemic (2020), and the current geopolitical escalation (2023-2026). Each recession had its own causes. Yet they share a common lesson. Israel's economy remains exposed to external shocks.

## **5. Comparative Analysis of Economic Success Parameters, Structural Challenges, and Prospects for Economic Resilience**

Any comparative analysis eventually confronts a question. Do the structural features we identify actually determine future trajectories? The results above suggest Israel is an economy with exceptionally high innovation activity—and, at the same time, a set of structural imbalances. These imbalances could, over the long term, cancel out the advantages of technological leadership.

The most specific challenge to Israel's economic model is demographic. No other country and region in the sample has a comparable structure. Unlike the relatively homogeneous societies of Scandinavia or East Asia, Israeli society is divided into distinct demographic groups. These groups have radically different economic profiles and value systems. The Central Bureau of Statistics identifies four main groups: secular Jews, national-religious Jews, ultra-Orthodox Jews (Haredim), and Arab citizens of Israel [46].

Economic behavior differs fundamentally across these groups. The secular and national-religious population (roughly 58% of the total) is integrated into the modern market economy. Employment and education levels are high. Participation in the high-tech sector is active. The ultra-Orthodox community (about 13% in 2023) has historically shown very low male involvement in the secular economy. A cultural norm of full-time Torah study has been supported by state allowances and military service exemptions. The Arab population (about 21%) faces a complex

set of barriers—linguistic, infrastructural, cultural, and discriminatory. These barriers limit economic mobility, especially for women [47] (see **Table 8**).

**Table 8.** Demographic structure and economic indicators by population group (2023).

| Group                    | Population Share (%) | Employment Rate (%) | Average Years of Schooling | Fertility Rate (Children per Woman) |
|--------------------------|----------------------|---------------------|----------------------------|-------------------------------------|
| Secular Jews             | 45                   | 82                  | 14.2                       | 2.1                                 |
| National-Religious       | 13                   | 78                  | 13.5                       | 4.2                                 |
| Ultra-Orthodox (Haredim) | 13                   | 51 (men: ~30)       | 8.5                        | 6.5                                 |
| Arab Citizens            | 21                   | 62 (women: ~40)     | 11.8                       | 3.0                                 |
| Others                   | 8                    | 75                  | 12.5                       | 2.5                                 |

Sources: CBS Israel [46]; Taub Center for Social Policy Studies [47]. Note: Employment rates for Ultra-Orthodox and Arab groups reflect significant gender disparities. Male Ultra-Orthodox employment is depressed by full-time religious study norms; female Arab employment is constrained by cultural and infrastructural barriers. Fertility rates vary dramatically across groups, with Haredim showing the highest rate at 6.5 children per woman.

The numbers in **Table 8** paint a troubling picture when overlaid with demographic projections. At a fertility rate of 6.5 children per woman—unprecedented among OECD countries—the ultra-Orthodox population doubles every 20 years. By mid-century, their share could reach 25% - 30% [48]. If current employment patterns hold, this threatens a progressive erosion of the tax base.

But linear extrapolation would be a mistake. Over the past fifteen years, Haredi women's employment rose from 45% to 80%. Male employment increased more modestly [49]. Arab women's employment also nearly doubled over the last decade. These shifts stem from two forces. Economic pressure—rising living costs make the single-breadwinner model unsustainable. And cultural evolution—norms are changing, slowly but visibly.

Positive trends do not erase the systemic problem. Taub Center research documents a widening productivity gap. The high-tech sector generates 18% of GDP with only 10% of employment. It operates in isolation from stagnating traditional industries [47]. Scaling up the tech sector alone cannot overcome this duality. The sector demands specific cognitive and cultural competencies. These remain out of reach without fundamental reform of basic education.

Alongside the demographic challenge lies a geopolitical one—unique to this sample. Unlike Singapore or South Korea, Israel faces an unprecedented density of existential threats. Iran's nuclear program. Hezbollah. Hamas. The massive mobilization that began in October 2023 [50].

The economic costs of this instability extend far beyond direct military spending. SIPRI data show defense expenditure at 5.3% of GDP in 2023 [51]. The indirect costs matter more. A country risk premium that raises the cost of capital. Cyclical outflows of venture investment during escalations. Selective emigration

of skilled workers. Reputational damage from the BDS campaign is complicating academic and business cooperation [52] (see **Table 9**).

**Table 9.** Defense expenditure of sample countries and regions (2023).

| Country and Region | Defense Expenditure (% of GDP) | Defense Expenditure per Capita (\$) |
|--------------------|--------------------------------|-------------------------------------|
| Israel             | 5.3                            | ~2900                               |
| South Korea        | 2.7                            | ~900                                |
| Singapore          | 3.1                            | ~2600                               |
| Chinese Taipei     | 2.4                            | ~780                                |
| Estonia            | 2.8                            | ~800                                |
| Finland            | 1.9                            | ~970                                |
| Denmark            | 1.4                            | ~960                                |
| Sweden             | 1.9                            | ~1080                               |
| Czechia            | 1.3                            | ~350                                |
| Ireland            | 0.3                            | ~185                                |
| New Zealand        | 1.1                            | ~530                                |

Source: SIPRI military expenditure database [51]. Note: Israel's 2023 figures include emergency mobilization costs following the October 7 attacks. South Korea and Singapore maintain high per capita spending due to persistent regional security threats. Ireland's low figures reflect its policy of military neutrality.

Estimates from the IMF and the Bank of Israel outline three possible paths. The baseline scenario—status quo with periodic escalations—projects moderate GDP growth. The optimistic scenario envisions regional stabilization and broader Abraham Accords. This would accelerate growth by lowering investor risk premiums and opening new markets. The pessimistic scenario—multi-front war or prolonged international isolation—could set the economy back by years [53]. Policymakers must plan for the full spectrum of these outcomes.

A third structural challenge is socio-economic inequality. It is tightly bound up with demographics. Before redistribution, the Gini coefficient is high. Effective social transfers bring it down to moderate levels. Yet the poverty rate—roughly 20% of the population—remains among the highest in the OECD. And this poverty is highly concentrated, both demographically and geographically [54] (see **Table 10**).

**Table 10.** Social inequality indicators (2022-2023).

| Country and Region | Gini Coefficient (After Redistribution) | Poverty Rate (%) | T10/B10 Ratio |
|--------------------|-----------------------------------------|------------------|---------------|
| Israel             | 0.35                                    | 20.8             | 14.2          |
| South Korea        | 0.31                                    | 15.2             | 9.8           |
| Singapore          | 0.38                                    | 10.5             | 12.5          |

**Continued**

|             |      |      |      |
|-------------|------|------|------|
| Ireland     | 0.29 | 13.1 | 10.2 |
| Estonia     | 0.31 | 20.5 | 8.5  |
| Finland     | 0.26 | 13.8 | 6.2  |
| Denmark     | 0.24 | 12.5 | 5.8  |
| Sweden      | 0.28 | 15.2 | 6.8  |
| Czechia     | 0.25 | 11.2 | 5.2  |
| New Zealand | 0.32 | 13.5 | 8.9  |

Sources: OECD Income Distribution Database; National Insurance Institute of Israel [54]. Note: The Gini coefficient measures income inequality on a scale from 0 (perfect equality) to 1 (perfect inequality), calculated after taxes and transfers. The T10/B10 ratio compares the average income of the top 10% to the bottom 10% of the population. Israel's high poverty rate (20.8%) and T10/B10 ratio (14.2) reflect the demographic concentration of poverty among Haredi and Arab populations, despite effective redistribution mechanisms.

The concentration of economic activity in a narrow segment creates social strain. Housing costs have surged. In Tel Aviv, the ratio of median house price to median income exceeds 12. Homeownership is out of reach for much of the population—unless family support steps in [55]. This deepens generational inequality. It locks down mobility. The 2011 protests, which brought hundreds of thousands onto the streets, and subsequent waves—in 2023 against judicial reform, and during the war—reveal how fragile the social contract has become [56].

Institutional challenges form the fourth dimension of structural problems. Israeli democracy operates under permanent tension. Secular versus religious. Ashkenazi versus Sephardi. Jewish versus Arab. Left versus right. The absence of a constitution creates legal uncertainty. The 2023 judicial reform attempts exposed this tension with unprecedented sharpness. Mass protests followed. The political system was paralyzed for months [57].

For economic analysis, what matters is how these reforms affected the institutional environment. Empirical literature shows that judicial independence and legal predictability correlate with investment activity and long-term growth [58]. Periods of political instability—five parliamentary elections between 2019 and 2022—generate uncertainty. This uncertainty feeds into investment decisions. Foreign direct investment shows a downward trend. The high-tech sector, however, remains relatively resilient. Global venture capital flows do not stop easily [59] (see **Table 11**).

The numbers in **Table 11** tell an uncomfortable story. Ten years of decline. CPI down. Rule of law down. Political stability is down. This is not a blip. It is a trend. And it matters more than the other challenges discussed above. Why? Because institutions are the operating system of an economy. Education policy can fix demographics. Diversification can soften geopolitical risk. Redistribution can ease inequality. But when the operating system itself is degrading, nothing else works properly.

**Table 11.** Dynamics of Israel's institutional indicators (2010-2023).

| Year | CPI (0 - 100) | Rule of Law (WGI) | Political Stability (WGI) |
|------|---------------|-------------------|---------------------------|
| 2010 | 71            | 1.35              | -0.85                     |
| 2015 | 68            | 1.28              | -0.92                     |
| 2020 | 61            | 1.22              | -1.05                     |
| 2023 | 62            | 1.18              | -1.18                     |

Sources: Transparency International [42]; World Bank WGI [33]. Note: All three indicators show deterioration. CPI dropped from 71 to 62. Rule of Law fell from 1.35 to 1.18. Political stability declined from -0.85 to -1.18. The trend is consistent. Institutional quality is weakening. This matters for long-term economic resilience.

Still, the economy has real strengths. Cybersecurity, AI, agrotech, water tech, medical tech—Israel leads in all of them. These are not niche markets. They are global growth sectors. And they keep selling even when rockets fall. These sectors stay resilient even during geopolitical escalation. Global demand for their products does not disappear overnight [60]. Second, the development of the Leviathan gas fields (2019) turned Israel from an energy importer into an exporter. This structurally improved the trade balance. It also reduced vulnerability to external energy shocks [61]. Third, demographic growth offers a growing domestic market and labor force. Aging societies in East Asia and Europe cannot afford this luxury. By 2050, the population could reach 15 to 18 million. If peripheral groups are integrated, this creates massive economic potential. Fourth, the 2020 Abraham Accords—and the potential expansion of normalization with Arab countries—open doors to markets that were closed for decades. The potential for regional cooperation in energy, water, logistics, and technology remains largely untapped [62].

The Czech-Israeli dimension deserves special discussion. For a Czech academic audience, it holds not just analytical but also historical and political interest. Czechoslovakia occupies a unique place in Israel's early history. Czechoslovak arms—Avia S-199 fighters, artillery, ammunition—played a critical role in the 1948-1949 War of Independence. This came at a time when a British embargo threatened the survival of the young state [63]. This historical memory forms a distinct backdrop for bilateral relations. Yet in economic terms, these relations remain well below their potential (**Table 12**).

**Table 12.** Czech-Israeli economic cooperation (2023).

| Indicator                               | Current Value  | Data Source                                              |
|-----------------------------------------|----------------|----------------------------------------------------------|
| Bilateral Trade (Exports + Imports)     | \$1.97 Billion | Czech Statistical Office, Foreign Trade Statistics [65]  |
| Czech Exports to Israel                 | \$1.12 Billion | Czech Statistical Office, Foreign Trade Statistics [65]  |
| Israeli Exports to Czechia              | \$0.85 Billion | Central Bureau of Statistics, Israel, Foreign Trade [66] |
| Czech FDI in Israel (Accumulated Stock) | ~\$350 Million | Czech National Bank, Balance of Payments [67]            |

## Continued

|                                            |                |                                                          |
|--------------------------------------------|----------------|----------------------------------------------------------|
| Israeli FDI in Czechia (Accumulated Stock) | ~\$280 Million | Czech National Bank, Balance of Payments [67]            |
| Czech Companies Operating in Israel        | ~45            | CzechTrade Agency, Market Reports [68]                   |
| Israeli Companies Operating in Czechia     | ~35            | Israel Export Institute, Partner Countries Database [69] |

Note: Bilateral trade figures come from the official Czech Statistical Office and CBS Israel data. FDI data are drawn from the Czech National Bank's Balance of Payments. The projected trade growth potential of \$3.5 - 4 billion by 2030 is based on extrapolating 2015-2023 trends (average annual growth of ~4.5%). This is not an official estimate.

The analysis can be more profound if we go beyond structural issues and prospects for bilateral cooperation. National characteristics determine long-term trajectories. The previous tables presented institutional and macroeconomic indicators. Now we turn to something more fundamental. Cognitive skills. Cultural values. The quality of the legal environment. All of these form the foundation of economic institutions.

Standard indicators—GDP, R&D expenditures, number of patents—show results, not causes. Why does Israel innovate at a global level despite its modest PISA results? Why do small Scandinavian countries outperform much larger economies? The answer lies in the variables that shape behavior and institutions. **Table 13** presents these variables.

**Table 13.** Fundamental national characteristics: income, cognitive skills, cultural dimensions, and rule of law.

| Country and Region | GNI per Capita (USD, Atlas, 2023) | PISA Mathematics (2022) | Individualism (Hofstede, 0 - 100) | Rule of Law Index (WGI, -2.5 to +2.5) |
|--------------------|-----------------------------------|-------------------------|-----------------------------------|---------------------------------------|
| Israel             | 54,970                            | 464                     | 15                                | 1.18                                  |
| South Korea        | 33,990                            | 540                     | 18                                | 1.02                                  |
| Singapore          | 84,710                            | 575                     | 20                                | 2.52                                  |
| Chinese Taipei     | 33,570                            | 532                     | 17                                | 1.35                                  |
| Ireland            | 98,960                            | 492                     | 70                                | 1.68                                  |
| Estonia            | 29,760                            | 510                     | 60                                | 1.75                                  |
| Finland            | 54,180                            | 484                     | 63                                | 2.25                                  |
| Denmark            | 68,820                            | 492                     | 79                                | 2.45                                  |
| Sweden             | 58,670                            | 489                     | 71                                | 2.18                                  |
| New Zealand        | 46,930                            | 494                     | 79                                | 2.12                                  |
| Czechia            | 29,550                            | 478                     | 58                                | 1.05                                  |

Sources: World Bank World Development Indicators (GNI) [64]; OECD PISA 2022 Results (Mathematics) [30]; Hofstede Insights Country Comparison Tool (Individualism) [65]; World Bank Worldwide Governance Indicators (Rule of Law) [32].

Each of the four indicators in **Table 13** paints a multidimensional picture. We begin with GNI per capita using the Atlas method, applying a three-year moving

average of exchange rates to smooth fluctuations [64]. Based on 2023 data, absolute leaders are Singapore (\$84,710) and Ireland (\$98,960). However, multinational transfer pricing distorts Ireland's figures. Israel (\$54,970), Sweden (\$58,670), and Finland (\$54,180) sit at the top end. The Czech Republic (\$29,550) and Estonia (\$29,760) occupy the lower end.

The second indicator is the 2022 PISA mathematics scores, chosen to replace the controversial national IQ concept [66]. PISA measures specific learning outcomes of 15-year-olds rather than hypothetical general intelligence, making it more reliable [30]. The methodology is transparent. Psychometric standards are high. It carries none of the cultural baggage of national IQ studies.

East Asian countries and regions lead: Singapore (575), South Korea (540), and Chinese Taipei (532). Estonia (510) leads Europe, ahead of Finland (484). Denmark (492), Ireland (492), New Zealand (494), and Sweden (489) sit in the middle, while Israel (464) and the Czech Republic (478) bring up the rear. This points to a systemic problem in basic education.

This raises a paradox. If PISA-measured cognitive skills predict economic growth [18] [19], why does Israel demonstrate exceptional innovative activity despite current PISA results? The answer lies in the Israeli human capital model. It lacks broad basic competencies, instead creating an elite stratum through technological universities: the Technion, the Weizmann Institute, and Tel Aviv University. Israel invests in a narrow peak rather than a broad base like Singapore or Finland. This strategy works for an innovation-driven economy.

Hofstede's Individualism Index [65] [67] is limited because the sample lacks representativeness, explained by shifting cultural values since then [68]. Despite this, the indicator remains widely used for comparative analysis.

High individualism characterizes Scandinavian and Anglo-Saxon countries (Denmark 79, New Zealand 79, Sweden 71, Ireland 70). In direct contrast, East Asian countries and regions (Singapore 20, South Korea 18, Chinese Taipei 17) have low levels reflecting Confucian values. The Czech Republic (58), Estonia (60), and Finland (63) occupy an intermediate position.

Israel (15) represents the most paradoxical case: low individualism corresponding to East Asian countries and regions contradicts the "startup nation" image. Yet there is an explanation. Israeli individualism is not Western liberal individualism, but a specific form of collective individualism (Oz Almog 2004). Entrepreneurs act within dense social networks—military units (Unit 8200), academic groups, and immigrant communities. These networks ensure trust, information exchange, and resource access, reducing start-up transaction costs.

The paradox of low individualism and high innovation indicates that Hofstede's model is imperfect. It ignores additional dimensions: interpersonal trust, social network density, and group-context risk taking. These informal institutions [7] may hold the key to understanding the Israeli model.

The fourth indicator is the World Bank Rule of Law Index, an aggregate based on over 30 data sources [32] [33]. Statistical methods combine disparate sources,

making it the most comprehensive cross-country comparison tool despite limitations from subjective expert assessments [64]. Singapore (2.52) is the absolute leader, followed by Scandinavia (Denmark 2.45, Finland 2.25, Sweden 2.18) and New Zealand (2.12). Israel (1.18) compares with the Czech Republic (1.05) and South Korea (1.02). Israel's intermediate position reveals strengths (independent judiciary, press freedom) and weaknesses (no constitution, religious party influence, planned 2023 judicial reforms).

It should be acknowledged that, although the bivariate associations between the four indicators reveal observable patterns, the small sample ( $N = 11$ ) does not provide sufficient statistical power for the selected comovement coefficients. Therefore, they can be considered as true causal or robust relationships. At the same time, these indicators reveal a positive descriptive association between GNI per capita and PISA results. Clearly, the wealthier countries and regions selected achieve better results in basic education. However, small Estonia exhibits significantly better PISA results despite its lower GNI. This can be interpreted as: the priorities put forward in education policy can compensate for income constraints.

Equally important, the descriptive relationship between GNI and the rule of law index appears stronger. This is consistent with institutional theory [8] [9]. Meanwhile, the comovement between individualism and GNI, although positive, is weaker. The author emphasizes that the presented observations are descriptive in nature, emphasizing macro-level patterns, but without establishing causal mechanisms.

Israel, as always, violates this pattern. Moderate GNI. Low PISA scores. Extremely low individualism. Yet highly innovative. This suggests compensatory mechanisms: talent concentration in elite universities, military technology transfer (especially cyber intelligence units), strong social networks, and the 1990s immigration wave.

These observations show that standard cross-country comparisons can be misleading. Israel is unique: a specific combination of military, demographic, cultural, and historical factors created an innovation ecosystem without direct parallels. Any attempt to “copy” the Israeli model is doomed to fail. Success depends on a unique historical path.

## 6. Conclusions

Comparing Israel with ten technologically advanced small open economies—South Korea, Singapore, Chinese Taipei, Ireland, Estonia, Finland, Denmark, Sweden, New Zealand, and the Czech Republic—yields clear results. The goal was simple: explain Israel's economic model. The data reject single-variable explanations.

The main empirical finding is unequivocal: Israel's innovation model is unique. The private sector funds 79% of R&D, reaching 6.01% of GDP. GDP per capita (PPP) grew from \$24,500 in 2000 to \$48,200, fueled by massive venture capital (\$8.5 billion in 2023 for 9.5 million people). Unfortunately, growth was interrupted

by the Second Intifada, the 2008 crisis, the pandemic, and the current geopolitical escalation. The model is highly vulnerable to external shocks. Scandinavia thrives on balanced institutions; Asian tigers prefer state-coordinated policies. Israel is strikingly different: the private sector drives innovation with modest state support. Not universal; just adapted to local conditions.

The paradox is clear. World-class innovation exists alongside moderate incomes (\$54,970), low PISA scores (464), and extremely low individualism (15 on the Hofstede scale). The mystery lies in collective individualism: entrepreneurs operate within dense networks—military units, academic groups, immigrant communities. This reduces transaction costs, compensating for low formal individualism. Standard intercultural typologies fail here. The model relies on four shortcomings [69].

First, demographics. Tech employs just 10% of the workforce but produces 18% of GDP. Many Haredi men study in yeshivas instead of working, while many Arab citizens work in the informal cash economy. By 2065, the Haredi population could reach 25% - 30%. This shrinks the tax base. A demographic advantage turns into an irreparable deficit.

Second, geopolitics. Ongoing conflicts require massive defense spending: 8.4% of GDP in 2024. Beyond direct costs, hidden losses mount. Rocket attacks send venture capital fleeing, skilled workers emigrate, and the BDS campaign disrupts ties. Israel constantly pays a risk premium.

Third, institutions. Decay is evident. The index fell from 71 to 62 in thirteen years. Five elections in three years. Mass protests over judicial reform. If courts weaken, property rights erode, and investors notice.

Fourth, inequality. One in five Israelis lives in poverty. In Tel Aviv, buying an average apartment takes twelve years of income. The social contract is crumbling. The 2011 protests were a warning; the 2023 judicial protests are another.

Fixing this requires simultaneous action. Education must integrate the periphery—Haredi women already set the example, boosting employment from 45% to 80% in fifteen years. Courts must restore independence. The Abraham Accords must expand to mitigate geopolitical risks. Infrastructure needs investment; the Leviathan gas fields proved what targeted spending can do for the trade balance.

Regarding limitations: descriptive association is not causation. Careful econometrics are needed to prove true cause-and-effect. Human capital and R&D investments take decades to recover. Institutional and cultural indices rely on subjective expert assessments. Geopolitical upheavals disrupt long-term trends. None of this invalidates the conclusions; it just means they must be read carefully.

Where next? Micro-econometric analysis of how geopolitical upheavals influence venture capital flows, using Israel as a natural experiment. Long-term tracking of Haredi and Arab integration. Comparing innovation ecosystems in Israel and the Visegrad countries. Exploring the paradox of collective individualism through qualitative methods and cultural dimensions that Hofstede overlooked.

The Israeli economy is torn by contradictions. The tech sector is stable; tradi-

tional industries are not growing. Demographics cut both ways. Institutional restructuring is as necessary as air. Yet democracy functions amid geopolitical risks, which are not fatal. Given favorable factors, per capita GDP could reach \$60,000 - \$65,000 by 2035. Revolution is unnecessary; Israel needs sustainable growth. What leads us astray? Political decisions are unsupported by strategic thinking, openly contradicting economic laws. The task of academic research is laughably simple: continue the analysis, avoiding hype and despair.

## Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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## Appendix: Data Sources and Definitions

| Indicator/<br>Parameter                     | Exact Source &<br>Database Edition                                             | Specific<br>Series/Code                           | Observation<br>Year(s) | Unit of<br>Measurement          | Access Date &<br>Conversions                                                                 |
|---------------------------------------------|--------------------------------------------------------------------------------|---------------------------------------------------|------------------------|---------------------------------|----------------------------------------------------------------------------------------------|
| GDP per Capita<br>(PPP & Nominal)           | World Bank WDI<br>(2024 ed.)/IMF<br>WEO (Oct 2024)                             | NY.GDP.PCAP.P<br>P.CD/NY.GDP.P<br>CAP.CD          | 1995-2023              | Current US\$                    | Accessed Nov 2024. No<br>conversion needed<br>(already per capita)<br>[27] [28]              |
| R&D Expenditure<br>(% of GDP)               | OECD Main<br>Science and<br>Technology<br>Indicators<br>(2023 ed.)             | GERD<br>(% of GDP)                                | 2022-2023              | % of GDP                        | Accessed Oct 2024.<br>Gross Domestic<br>Expenditure on R&D<br>divided by GDP [43]            |
| PISA Scores<br>(Math/Science)               | OECD PISA 2022<br>Database<br>(Release Dec<br>2023)                            | Combined<br>Math/Science<br>Mean Scores           | 2022                   | Score<br>(0 - 1000)             | Accessed Jan 2024.<br>Mean scores for<br>15-year-olds [30]                                   |
| Venture Capital<br>Investment               | Crunchbase/Pitch<br>Book/IVC<br>Research Center<br>(2024 ed.)                  | Total VC Raised<br>(Seed, Early, Late)            | 2010-2023              | USD billion                     | Accessed Feb 2024.<br>IVC data mapped to<br>Crunchbase definitions<br>for harmonization [39] |
| Institutional<br>Indices (CPI, RoL,<br>EFI) | Transparency Int.<br>(2024)/World<br>Bank WGI<br>(2023)/Heritage<br>Fdn (2024) | CPI Score/Rule of<br>Law<br>Estimate/EFI<br>Score | 2023                   | 0 - 100/-2.5 to<br>2.5/0 - 100  | Accessed Jan 2024.<br>WGI estimates are<br>unitless normal<br>deviates [32] [35] [42]        |
| High-Tech<br>Exports                        | World Bank<br>WDI/UN<br>Comtrade                                               | TX.VAL.TECH.M<br>F.ZS                             | 2023                   | % of<br>Manufactured<br>Exports | Accessed Nov 2024.<br>Based on SITC Rev 3<br>classification [37]                             |
| Demographic &<br>Labor Data                 | Central Bureau of<br>Statistics Israel<br>(2023)/OECD<br>(2023)                | Various National<br>Accounts Series               | 2023                   | %/Years/Rate                    | Accessed Dec 2023.<br>Standardized to OECD<br>definitions where<br>applicable [46] [47]      |
| Cultural<br>Dimensions                      | Hofstede Insights<br>(2024 Update)                                             | Individualism<br>Index (IDV)                      | 2023 (static)          | Index<br>(0 - 100)              | Accessed Jan 2024. No<br>temporal conversion;<br>cross-sectional [65]                        |