

Israel – Bash or Emulate?

Lessons in Development Performance Through Adversity

Greg Mills



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Executive Summary

No one needs reminding that Israel's external image is dominated by pictures of conflict and perceptions of injustice. Lost in this portrayal, however, is how smart and successful Israel has been in developing its economy. This Paper surveys Israel's impressive economic growth story. There is no single explanation for Israel's success, although high on the list is surely its commitment to research and development. Also vital has been the mind-set that living in a rough regional neighbourhood has engendered amongst the population – of robust accountability across society, long-term thinking and a problem-solving ethos. Today Israel is not only a world leader in diamond polishing and cutting, but more recently in software, semi-conductors and telecommunications, where the concentration of high-tech start-up industries has given it the monikers 'Silicon Wadi' and 'Start-Up Nation'. In addition, its rapid agro-development in a dry Mediterranean climate has meant that since independence in 1948, Israel's agricultural output has increased 16-fold, whilst simultaneously decreasing water usage in the industry by 40 per cent in 60 years. Assessing why Israel has done so well in economic terms – and certainly by comparison to its neighbours – is typically shaped by one's view of the region's politics, ancient and contemporary. Nevertheless, developing countries would do well not to ignore the many lessons that can be drawn from Israel's impressive economic progress in the face of stark challenges of security, geography and resources.

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ADRIVE DOWN THE WEST BANK OF THE JORDAN VALLEY is a journey through a pop-up Bible. Here, there, everywhere are historic sites – from Jericho to Jerusalem, the Dead Sea to Tiberias on the Sea of Galilee, the road north to Nazareth, and that to Nablus, the home of the Samaritans.¹

With so much history and not a little emotion, no wonder this tiny patch of earth is so fought over. As one descends to 300 metres below sea level south from Jerusalem, there scant greenery is in sight. Caramel hillsides rise up like giant blobs of ice cream slowly melting in the baking sun; the landscape is broken only by the odd camel, a few Bedouin, and Route 90 snaking up from the Negev. Pass the road to *Qaser al Yahud*, where John baptised Jesus in the Jordan, today little more than a stream, and the opposite turn-off to Jericho and, suddenly, the desert comes to life: greenhouses and shade cloth hiding tomatoes, grapes, peppers, herbs, and melons, where Arab and Jew work side-by-side for the European table.

Just 20 per cent of Israel is arable. Yet since its independence in May 1948, the country's agricultural output has increased 16-fold, many times the rate of population growth. This is down to considerable perspiration and, more importantly, a large dollop of innovation and co-operation – nothing new. Close to the Desert Plant Research Station in Be'er Sheva is a farm cultivated by the Nabateans, the earliest desert farmers. Using sophisticated terracing, every drop of runoff water was collected and diverted to the fields and orchards.

Fast-forward 2 000 years and today Israel produces over two-thirds of its food requirements. Agriculture exports are worth more than US\$2 billion, over half of which is fresh produce, including flowers, vegetables and exotic fruits.

Although no one need reminding that Israel's external image is dominated by pictures of conflict and perceptions of injustice, lost in this portrayal is how smart Israel has been in developing its economy. In agriculture, for example, it has used technology, such as the drip and direct-feed computerised irrigation system, to reduce water usage and increase output. The outcome is that higher-yield crops have increased both in volume and financial sales values. Just 40 per cent of the fresh water used for agriculture 60 years ago is used today, and half the water is recycled.

Start-Up Nation

It's all a far cry from 1948, when no one gave the newly-independent Jewish state much of a chance. With just 800 000 citizens, many traumatised by war and the Holocaust, on a sliver of dry, rocky territory, violently contested internally and

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externally by foes bent on wiping its new Jewish administrators off the map, the new state of Israel could never take its existence for granted.

Despite rapid population growth (now over 7.5 million, which makes 370 people per km², roughly the same density as Rwanda, Holland and India), Israelis enjoy a per capita income today of US\$29 600, putting them in the top 30 world-wide, between Spain and Italy. Their direct neighbours, Egypt, Jordan, Syria, Lebanon, and the embryonic Palestinian state have (US dollar) incomes respectively of \$6 400, \$5 700, \$5 100, \$13 950 and just \$2 800. Israel is the 24th largest economy in the world, ranking 15 out of 169 nations in the UN's Human Development Index as a 'very highly developed' country. A member since 2010 of the Organisation of Economic Co-operation and Development (OECD) group of higher-income countries, it has struck a range of free trade agreements, including with Europe, the US, Mexico, Canada, the MERCOSUR trade bloc in Latin America, and even with its more complicated partnerships in Jordan, Egypt and Turkey.

Although it depends on imports for nearly all of its raw materials from oil to diamonds, Israel has become a global industrial hub. Not only is it a world leader in diamond polishing and cutting, but also in processed foods, electronic and medical equipment; and more recently, software, semi-conductors and telecommunications, where the concentration of high-tech start-up industries has given it the monikers 'Silicon Wadi' and 'Start-Up Nation'. Indeed, Israel boasts the highest-density of start-up ventures by population in the world – one for every 1 844 Israelis.² After the US, Israel has more companies listed on the NASDAQ than any other country in the world, and more than Europe combined.

Put differently, by 2008, per capita venture capital investment in Israel (some US\$250 per person, per year) was 2.5 times greater than in the US; 30 times than in Europe; 80 times than in China; and 350 times greater than in India. Israel attracted close to US\$2 billion in venture capital, about the same as the UK (with nearly ten times the number of people) or France and Germany combined (though 20 times their populations).

It's a long way from grainy images of *kibbutzim* farmers as the pioneering, rural ideal of happy socialist co-operation in the Jewish homeland.

There is no single explanation for Israel's success, although high on the list is surely its commitment to research and development: Israel's civilian R&D expenditure is 4.5 per cent of GDP, while Japan's is 3.2 per cent, the United States' 2.7 per cent, UK 1.9 per cent and China 1.4 per cent.³

Israel's detractors routinely cite US assistance as the main reason for its economic success. Much of the US\$3 billion Israel annually receives from Washington is spent on military kit, however, rather than development. Egypt receives the same,

The concentration of high-tech start-up industries has given Israel the monikers ‘Silicon Wadi’ and ‘Start-Up Nation’

though no one attributes its (pre-Arab Spring) impressive economic growth to US support.

That said, there can be no doubt that the military dimension has proved vital in Israel’s overall development. Military R&D, for instance, whilst difficult to quantify, is estimated to have historically counted for as much as 40 per cent of the national budget in years of highest insecurity. By 2010, this was down to 6.3 per cent, but still placed Israel in the top-six – behind North Korea, Eritrea, Saudi Arabia, Oman and United Arab Emirates. The military, the regional threat and limited international friendships have combined to drive innovation in military technology: As the first Israeli Prime Minister David Ben-Gurion was reportedly fond of saying, ‘in the army it is not enough to be up to date; you have to be up to tomorrow.’⁷⁴

More important than R&D, however, has been the mind-set that the ‘martial ethos’ engendered. It is not necessarily a positive in all states at all times, but in the case of Israel it did promote a culture of robust accountability across society, long-term thinking and problem-solving. Major General Aharon Ze’evi-Farkash oversaw a variety of units during his 40 years in the armed forces, including the elite Unit 8200 signals intelligence unit and, from 2002 until his retirement in 2006, the Military Intelligence Directorate (known as ‘Aman’). Farkash, as he is widely known, says ‘It is also a bottom-up process since it is dependent on taking young, brilliant soldiers who are highly motivated because they understand what is at stake, and we give them a budget, a target and a short time-frame.’ An émigré from Romania, Farkash adds that immigrants to Israel have done remarkably well. He cites the way in which Israel confronted the suicide bomber challenge as an example of this ingenuity:

I met [Prime Minister Ariel] Sharon just one month after I was appointed. He let me find a solution to the suicide bomber challenge. In 2002 we lost more than 430 people to the bombers in 66 acts. By 2005 we had reduced this to just six acts and fifteen people were killed; in 2007, four [acts] and three people, and in 2008, zero. We – myself [*sic*] and Avi Dichter of the Shabak [the internal security agency] – convinced the Prime Minister to build the security fence. We convinced him that if we could build peace with the Palestinians it would have to be like peace with Lebanon and Egypt, where we minutely defined the borders. This idea came from young minds working in intelligence, thinking about the problem and the solution in a different way. In part, too, the idea behind the importance of separation also came from interviewing the 60 or 70 suicide bombers who failed

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to kill themselves. The common strand was that they all felt their death would make the Palestinian state closer, that their sacrifice was worth it no matter the cost and the limited direct impact.

This motivation comes also, Farkash maintains, ‘from the Jewish DNA’. Born in Romania, the General immigrated to Israel with his parents aged 14. ‘We survived in the Diaspora by being the best. In this way, Israel was not formed as a result of the Holocaust, even though it may have been the catalyst. This helps to explain why immigrants do so well,’ he says. ‘We have 800 engineers in the Army each year, and 400 of these are from this “periphery”.’ He says education and a social infrastructure where ‘everyone shares a sense of direction and of the future’ are important, and can be imitated by others ‘with the right leadership’.

Oded Distel of the Ministry of Trade and Industry’s ‘Newtech’ section agrees. ‘The notion of distance is very limited in Israel. Combined with a questioning attitude, we are used to having open, direct discussions, where we are always looking for something new, something which others have not thought of before. Part of this is down to the melting-pot nature of Israeli society and, especially, the number of skilled Soviet émigrés who arrived in the late-1980s and early-1990s, which offered certain technological opportunities’.

Money and Technology as Part of a ‘Package’

To translate ideas into business ventures, Israel has fostered a system which encourages and caters for entrepreneurship. It has established a ‘cluster’ of universities in close proximity to large and small companies, creating a virtuous space for suppliers, talent and capital.

Here the government offers a funding bridge through the office of the Chief Scientist in the Ministry of Trade and Industry, which provides US\$450 million in annual grants to 1 200 worthy projects from 2 000 applications. Much of this money is given to projects in the ‘proof of concept’ and ‘pre-seed’ phases. This money is paid-back in the form of royalties (with nominal interest), though as many as half of the original projects fail to deliver. Its high risk if high return for Israel, but it is a bottom-up process in that, as Gil Shaki in the office of the Chief Scientist says, ‘it is what the market throws up, where excellence and competitiveness win out. We are not picking winners and directing things top-down.’

Its services and high-tech edge is linked to a dynamic venture capital (VC) market, formed originally with government intervention around *Yozma* (meaning ‘initiative’ in Hebrew) in 1993 which, says Gaddy Weizman in the Ministry of

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Trade and Industry, ‘opened the floodgates and created a venture capital industry’. Ten *Yozma* ‘drop-down’ funds with US\$200 million in funding were set up by 1996. By 1999 a second fund had been listed on the NASDAQ. In 2011, the Israeli VC market was worth more than US\$5 billion.⁵

But the government does not provide all the answers. Take Orni Petrushka, for example. A former A4 pilot in the Israeli Air Force, he studied electrical engineering at the prestigious Technion Institute for Technology in Haifa, followed by a Master’s at Cornell. He served as the head of Systems Engineering at the ECI Telecom optical communications line, and prior to that he held various positions at Telcordia (formerly Bellcore). In 1993, when 35 years old, he started his entrepreneurial career co-founding Scorpio Communications which was acquired in 1996 by US Robotics for US\$72 million. In 1997 he and his partners founded Chromatis, an optical networking firm, which was purchased in just 26 months by Lucent for a whopping US\$4.75 billion and then, within 12 months, shut down in the wake of the dot.com collapse in 2001.

Today Petrushka divides his time between his alternative energy firms and philanthropic ventures. Although Scorpio took a 20 per cent of its US\$10 million start-up funding in the form of a loan from the Chief Scientist’s Office, he questions the utility of such a system. ‘A good company and product,’ he says, ‘does [*sic*] not need the support of government. I would also advise them not to use that route, as there are strings attached, especially with the export of intellectual property.’ He adds that ‘government does not understand the business world and its dynamics and the pressures of time, where business can’t wait until the next committee meeting for an answer.’ Rather than government intervention, people are all-important in entrepreneurship, even though he questions Israeli’s ability to run large businesses rather than excel at start-ups. ‘Israel is small and Israelis are entrepreneurial in their spirit – the fight for survival is part of the Jewish DNA. But we don’t operate in a way that a large company requires. We cut corners. We don’t do things by the book. And we get upset by tedious processes.’

Gili Raanan worked for ten years in the elite Unit 8200 once commanded by General Farkash. There, aged just 24 and armed with a Bachelor’s degree from Tel Aviv University, he was put in charge ‘of one of the largest software projects in Israel in terms of budget and manpower.’ When it was completed in time and within budget, he was awarded a presidential medal, the highest non-battle military honour. This, he says, ‘tells the story of a country that believes in talent and not in experience and while it makes terrible mistakes also achieves a lot by giving young guys the chance to prove themselves.’

‘The typical Israeli entrepreneur is 25, from a first or second generation immigrant family’

After leaving the military at 27, Gili joined the business support giant Amdocs for a year, and then started a company with a friend from the same unit working also with a retired general. ‘That also tells its own story. Just as colleges are for the American entrepreneur, military service is for the Israeli entrepreneur, where your profession is moulded and you acquire your network for the rest of your life.’

He later moved to California for six years where he started and ran, first, a web security operation (which was sold to IBM) and a ‘data centre automator’ (sold to EMC). Returning to Israel in 2008, he now runs the local Sequoia venture capital business, a US\$1 billion fund.

In addition to the military dimension, like his former boss Farkash, Gili highlights several other factors in Israel’s start-up success: ‘The immigrant society and that no one feel [*sic*] comfortable yet possesses the desire to prove themselves’; the Jewish mother syndrome ‘where they are never happy with their son’s achievements’; and the government’s early role in proving the start-up business model with funding. ‘The typical Israeli entrepreneur,’ observes Raanan, ‘is 25, from a first or second generation immigrant family, and has an unsatisfied mom!’ The ‘first driver of entrepreneurship is,’ he notes, ‘security and financial security in particular.’ Unlike China and India, he adds, Israeli entrepreneurs ‘have to think from Day One what foreigners and not their small domestic market wants.’ Saul Singer, co-author of the best-selling *Start-Up Nation* says that this is ‘why the Israeli high-tech entrepreneur is geared for the US market, to go through Silicon Valley.’

The high-tech industry is however not the whole economy. Comprising more than 50 per cent by value of Israeli exports, for all of its earning power, this capital intensive sector only provides employment for nine per cent of the workforce. The bulk of jobs still lie in more traditional sectors and services.

Exploiting Comparative Advantages

While not as high-profile as start-ups, agriculture and tourism are two other areas where Israel continues to exploit its comparative advantages. Indeed, the same lessons of fusing the aspects of technology, capital and skilled labour apply also to these areas.

Israel remains a major tourist destination, with 3.5 million annual visitors in 2010 bringing in US\$4.4 billion. And although agriculture accounts for less than three per cent of GDP and employment, it is a major export earner, as Israel moved away from farming low value grain to higher-value fruits and vegetables for the European table. In addition to the increase in yields, there has been a corresponding rise in varieties of products, resulting from the search for market advantage.

The high-tech capital intensive sector only provides employment for nine per cent of the workforce

‘Fifty years ago there were just 15 types of vegetable. Today there are more than 70 grown’, says Yitzhak Kiriati, the Director of Israel’s Export and International Co-operation Institute. ‘But there have been lots of failures along the way.’ But this is part of the job since ‘modern agro-business is not about what are the right crops to grow in a particular region based on tradition, but rather what will sell – what the market wants. Technology has been absolutely key in this, and much of it of a systemic rather than revolutionary nature. Today Israel holds the world-record for the amount of milk produced by a single cow in a year: 12 000 litres. But this has been achieved’, smiles Kiriati, ‘by knowing the performance and yield of every single cow in the country. That way breeding and feeding is carefully controlled and improved.’

The improvements are best summarised by a single statistic: In the 1950s, one farmer supplied food for 17 people; today this number is more than 100.

The lesson from agriculture, he maintains, is the same as start-ups. ‘If you want to succeed, you need to take care of the whole food chain: Producer, market, post-harvest and, critically, to find the right model to integrate the farmers with each other and the market.’

Another key lesson here for Africa and other developing nations is that this all has to start somewhere.

Israeli industrialisation initially followed the creation of a textile industry, itself based on cotton growing, with this sector comprising around 12 per cent of merchandise exports in the 1960s, second to diamonds and agriculture. However, with competition from Southeast Asia, many enterprises relocated into Jordan and Egypt. Today industry accounts for 33 per cent of economic output and two-thirds of services.

Israel’s agriculture growth in the face of severe water shortages is no accident. Again, it involves close co-operation between researchers, farmers, universities and other research centres, and extension officers. It is based on extensive market research about customer’s needs and wants, in Israel and outside. And new products have created additional business opportunities. Improvements in yields and crop quality have demanded innovations in irrigation and ‘fertigation’, machinery, automation, chemicals, cultivation and harvesting. As a result, the country has ten major companies producing irrigation and filtration equipment, while Israeli agro-specialists ply their trade across the world.⁶

Israel is also forging ahead in related new areas: water, bio-technology, Nano-technology and clean energy. But it has not all been plain sailing.

While the initial two post-independence decades enjoyed high growth of over ten per cent annually, a combination of the 1973 Yom Kippur War and the banking

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crisis of the early 1980s demanded a stabilisation plan in 1985 to curb runaway inflation (which touched 450 per cent), where market-oriented reforms put in place the conditions for today’s economy. This started a second phase of growth.

From 1996 to 2010, for example, Israel’s economy grew at an annual average of nearly four per cent, faster than other developed nations in spite of security crises including the ‘second *intifada*’ which kicked off in 2000.

Of course if Israel had failed to develop and remained aid dependent, all of the reasons given above, in addition to being in a difficult region, fraught internal politics, and low water supply (amongst others), would have been ready excuses for poor performance.

There is a joke which says that Singapore sent a delegation to Israel to learn about innovation. Of course, this cannot be learnt. It is a product of circumstance (the existential threat and the fight for survival); government policy and systems (including sponsorship for start-ups); linkages (between research centres, government and business); and education and skills (which relates also to the military dimension); all of which is sometimes explained by the term ‘culture’.

How Important is ‘Culture’?

It is important not to overstress the cultural aspect. While culture is an important unifying aspect, it does not explain why others have done well or badly too. As Singapore’s *prime-meister* Lee Kuan Yew reminds, the value of culture in development is only determined by history, not by argument.

Also, culture should not be used as an excuse to cherry-pick the importance of all the lessons from Israel’s experience – as from others. It is possible to learn lessons from Israel, but not only in the bits that are palatable.

For some other states don’t do as well – and even fail – in spite of having a critical mass of skills (read the Soviet Union); a government willing and able to spend (South Africa) or borrow to spend (Dubai); or even facing an existential threat. The whole innovation package includes embracing immigration (and the diversity of skills which results) and not just limited work permits (*a la* Dubai); ensuring government sponsorship is agreed and managed on a strictly commercial basis and not the basis of friendships, patronage or identity (including race); letting the market select projects and not picking winners (Malaysia); educating to challenge norms not learning by rote (the Arab world); empowering women and not excluding them (again, the bulk of the Arab world); and operating government with a maximum of flexibility and minimum of bureaucracy and hierarchy (the latter which is apparently largely antithetical to much of Asia and Africa).

While culture is an important unifying aspect, it does not explain why others have done well or badly

Gili Raanan believes that the Israeli experience is regardless replicated in some other centres, notably California and New York, where there is a high percentage of immigrants, along with a geographic concentration of educated people ‘enabling the exchange of ideas. But,’ he notes, ‘you need something to ignite this process – the government, a critical mass of guys or women, an event, whatever.’ Since technological solutions exist to most problems, the challenge is two-fold: Ensuring the governance and ownership issues that stand in the way of its adoption are removed and also changing the incentives – for example, that if African farmers produce more that the means exist for them to profit more from this, to get the surplus to market at a fair price.

The chances of Israel’s lessons being positively identified, learnt and applied until now have been lost in the swirl of politics. Ironically, for this reason, those that might benefit the most in Israel’s direct region have been the least likely to do so in spite of their domestic pressures, the type of which has in part given rise to the Arab Spring. In 2000, the Arab population of the Middle East was 280 million. Ten years later it was 360 million and in the 2020s, at current rates of growth, is expected to exceed 450 million. As a result, during the next decade they will have to create at least 50 million jobs. Sub-Saharan Africa, too, faces similar demographic pressures, with its population doubling to 1.5 billion by 2030, and with two-thirds of its people under 24, the vast majority of them unemployed.

Conclusion: Reasons for Success – and Failure

Like everything else in the Holy Land, assessing why Israel has done so well in economic terms – and certainly by comparison to its neighbours – is shaped by one’s view of the region’s politics – ancient and contemporary. Many have incentives to play down Israel’s achievements and use it as both a scapegoat and whipping-boy for the failings of others. And with nearly half the West Bank’s and 80 per cent of Gaza’s population under the poverty line, the conditions don’t only exist for deprivation, unemployment and radicalisation, but grist for Israel’s opponents. They see in Israel’s spectacular agricultural revolution not technological achievement, but land and water grabs.

That is not to say everything in Israel’s development story is rosy. It still faces serious economic challenges, not least the over-concentration of wealth in the hands of a few ‘tycoons’, the 15 or so families that control conglomerates dominating the economy. Widening wealth inequality is widely discussed, with one-quarter of the population living near or below the poverty line,⁷ though this relates in part to the 30 per cent of the population who do not work, most for religious reasons.

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An estimated two-thirds of ultra-Orthodox men (the group comprising about ten per cent of the overall population) in Israel study in *yeshivas* and do not work, reliant on government stipends to support their (usually large) families, costing the economy as much as US\$4 billion annually. The difficulty of translating start-ups into producers is also moot, though a number of large manufacturing companies have emerged including Teva, a market-leader in generic pharmaceuticals, Amdocs, web-publisher Conduit, and IT security firm Check Point. Increasingly, Saul Singer believes, Israel will have to gear its technological solutions not exclusively to the US but to developing world markets, where big, long-term opportunities lie.

Nevertheless, Israel's example of 'performance through adversity' contains numerous lessons for developing countries that shouldn't be ignored. Contrary to the highly-politicised caricatures of Israel as a US protectorate milking the Holocaust for all it is worth, nearly all its achievements stem from the firm conviction that their fate is not someone else's responsibility. Developing countries would do well to emulate, rather than bash, Israel.

Endnotes

- 1 This Discussion Paper is based in part on a research trip to Israel in October–November 2011 when the interviews cited were conducted in Tel Aviv, Nazareth and Jerusalem.
- 2 Dan Senor and Saul Singer, *Start-Up Nation: The Story of Israel's Economic Miracle*. New York: Twelve, 2011, p. 11.
- 3 Ibid, p. 13.
- 4 Shimon Peres cited in *ibid*, p. 226.
- 5 See <http://www.yozma.com/overview/>.
- 6 See <http://www.mfa.gov.il/MFA/History/Modern%20History/Israel%20at%2050/Israeli%20Agriculture-%20Coping%20with%20Growth>. See also The Israel Export & International Co-operation Institute, *Israel's Agriculture*. Tel Aviv: 2009.
- 7 See, for example, 'What's wrong with Israel, a-la Yaron Zelekha', *Haaretz*, 3 November 2011.