

WHAT IS MISSING IN VACA MUERTA? Is the US Non-Conventional Miracle Replicable Elsewhere?

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Palabras clave

Vaca Muerta, recursos no convencionales, esquistos, *shales*

Resumen

A pesar de su crecimiento sostenido y su notable despegue reciente, la producción de Vaca Muerta sigue muy por debajo de su potencial. Comparado con los plays similares de los EE.UU., su rampa de crecimiento es aún parsimoniosa; un recurso similar pero allí localizado estaría ya produciendo cómodamente en el rango mayor a 150 Mm³pe/d, quizás hasta 500 Mm³pe/d.

Relativamente pocas empresas además de las ya “iniciadas” han demostrado sólido interés. Es notable la ausencia de las independientes del tipo de las que exitosamente desarrollaron los plays no-convencionales en los EE.UU., y de PyMEs de servicio que ofrezcan mayor competencia de precios.

Analizamos y comparamos diversos factores de éxito en los plays de los EE.UU., algunos estructurales y quizás irrepetibles fuera de ese país, pero otros quizás no:

- *Ecosistema de infraestructura, suministros, servicios y mano de obra especializada*
- *Flexibilidad laboral*
- *Dinámica de tierras*
- *Oportunismo histórico*
- *Riesgo político y disponibilidad de capital*
- *Perfil de las empresas operadoras*

Concluimos que sería difícil replicar el “ecosistema de inversiones petroleras perfecto” fuera de los EE.UU. No obstante, habría mejoras posibles en Vaca Muerta.

Fundamentalmente, la volatilidad económica y polarización política, sobre todo en el 2019, no han ayudado a que se atraiga capital patrimonial y de deuda suficiente para multiplicar el número de empresas operadoras, de servicio y de infraestructura. Habría que consensuar un mensaje bipartidario de continuidad de política sectorial, y de estabilidad institucional.

Además, se podría pensar para Vaca Muerta en una política de incentivos fiscales, para que los incumbentes atraigan más socios, y así aumentar las áreas siendo efectivamente prospectadas y desarrolladas. Las empresas y los estados nacional y provinciales, deberían al menos invertir mancomunadamente en aliviar los cuellos de botella de infraestructura y de tejido social.

Introduction

Despite the resource's scale and quality, its ongoing de-risking process, seven fields in development phase and very attractive contractual and fiscal terms, Vaca Muerta has failed to date to attract the adequate level of investments for the play to take-off in line with its full potential. What is missing? We will analyze what differentiates Argentina's and USA's O&G investment environments, which of the features are structural to the USA and likely non-replicable elsewhere, and which others may be creatively addressed.

Comparisons are Brutal

The figure below shows the production responses of US non-conventional plays and Vaca Muerta's. They were normalized to their points of inception or detachment from their background conventional productions, as applicable.

The relatively parsimonious climb in Vaca Muerta makes evident the magnitude of delayed or forfeited rent generation and capture, an example of invisible value destruction. Albeit remarkably reducing its energy balance deficit (a laudable feat per se), Argentina could have been a sizeable oil exporter by now, reasonably producing 1-3 million barrels per day (~150-500 Mm³pe/d), from Vaca Muerta alone.

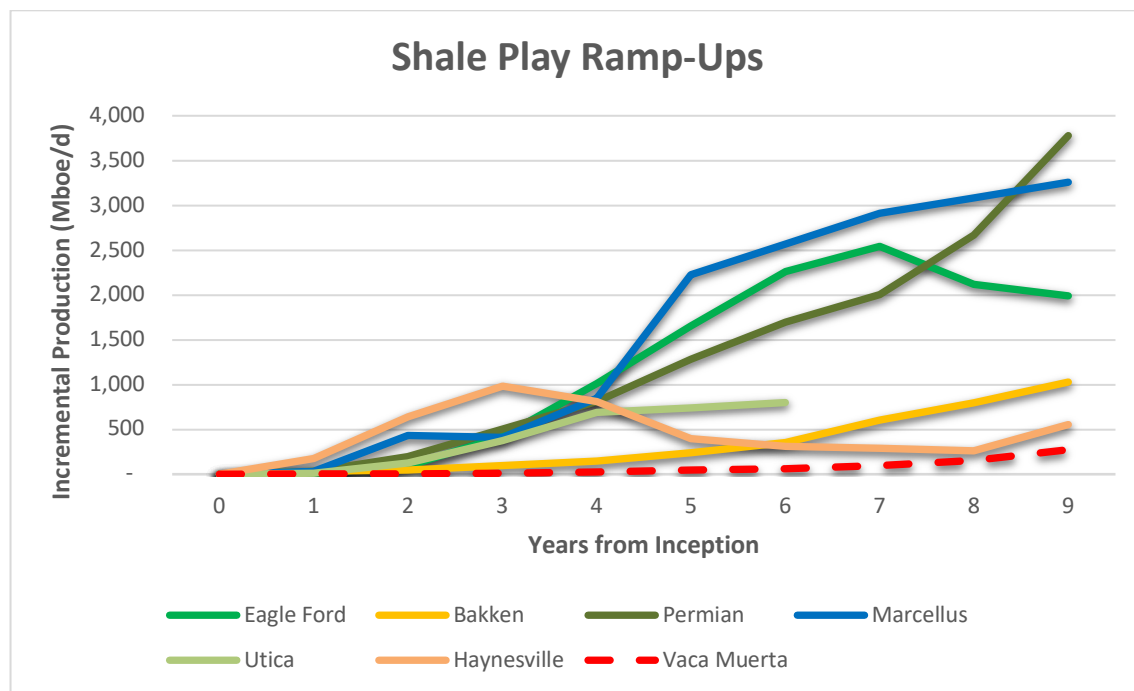


Fig. 1 - Vaca Muerta is lagging behind

Background

The Vaca Muerta unconventional play is renowned as one of the technically best in the planet. Its main shale target is unusually rich, and it covers a huge areal and vertical extent. It offers excellent license and fiscal terms. Moreover, it lies over a majorly uncultivated surface, with low environmental risk and low demographic density. It is part of the Neuquina basin petroleum system, also rich in overlaying conventional hydrocarbon history. Thus, Vaca Muerta can

leverage preexisting infrastructure, contractors and a well-trained professional and operational manpower, *for a conventional play*.

For non-conventional purposes, however, it suffers bottlenecks mainly of pressure pumping, proppant and infrastructure, which also place boundary constraints on output growth. These roadblocks are indirectly related to the perception of its surface risks, the same that hampers capital influx throughout the play's value chain.

The Cristina Kirchner administration (2007-2015) had recognized the play's potential and strategic importance. In 2014 it reformed the Hydrocarbon Law and gave oil and gas price incentives to Vaca Muerta's development. Since its controversial renationalization in 2012, YPF had followed a strategic mandate to de-risk and begin developing the resource. YPF while dominating the play, was thus the pioneer that remarkably accelerated the well location, drilling and completion learning curves, that the rest of the companies operating in the play could learn from and leverage.

The Mauricio Macri administration (2015-) has focused on stimulating foreign investment into the play by eliminating financial and regulatory roadblocks and putting emphasis on institutional quality. The national and provincial governments, acting jointly, achieved a groundbreaking framework agreement with the labor union with Vaca Muerta jurisdiction. The affected provinces are interested stakeholders; besides being beneficiaries from O&G activity and its multiplying effects, royalties are a significant source of their revenue. They have been instrumental in troubleshooting issues and bringing all parties to the table.

These administrations, supported by the Argentine Institute of Oil and Gas (IAPG) and its Houston sister (IAPG-Houston), have held five promotional events there during 2017-19. The first of such events was presided by president Macri himself, who spoke to an enthusiastically welcoming audience. Habitual visiting authorities to Houston include minister of finance, secretary of energy, provincial governor, senator...

Usually present also are C-suite executives from YPF, GyP (the Neuquén province's O&G company and its authority of application), and national and regional independents Pan American Energy, Pluspetrol, and Tecpetrol. Also always represented are the Argentine affiliates of the large IOCs active in Vaca Muerta, such as ExxonMobil, Chevron, Shell, Total, Wintershall DEA, Equinor and just recently, ConocoPhillips. However, and except for regional startup Vista Oil, few new independent-class operators have shown much interest.

What could be missing? To try to discern, let us analyze the conditions vis-a-vis the "*perfect O&G investment ecosystem*," the U.S. This U.S. environment may well be a unique mix, not fully replicable, not in Argentina or anywhere else outside North America; perhaps the "*American exceptionalism*" cited by Tocqueville (and Stalin), still persists. However, while some of these conditions are indeed structural, some perhaps are not.

Infrastructure, Supply and Service Ecosystem, and Qualified Manpower

In the U.S. any infrastructure gaps resulting from entrepreneurial upstream activity tend to be ephemeral, because other non-less entrepreneurial actors fill them. Thus, production growth is ultimately unfettered.

There is also "coopetition". In the Permian basin, for example, a consortium of over a dozen operators engages in solving infrastructure roadblocks. They have formed a partnership that addresses not only physical infrastructure, but "social fabric" issues as well (lodging, daycare, education, healthcare, craft workforce, etc.).

There is price competition between myriad service providers and material suppliers; global brands have to compete with regional and local players. For example, while the Super Majors active in Permian collectively gave roughly 80% of their OFS spend to the “Big Four” in 2014-15, after being prompted by the price drop and consequent pressure on lowering costs, by 2018 they had reduced that share dramatically.

Argentina’s shale OFS is dominated by the “Big Four,” almost exclusively. They are somewhat apprehensive towards *Argentine Risk*, but they command the local market. Costs are still high relative to those in the U.S. and could perhaps benefit from more competition; but it seems difficult to attract junior OFS players, more vulnerable to the notorious local political and economic instability.

Flexible Labor Laws

The crisis caused by the 2014 sharp oil price drop sent dozens of small operators and service companies into bankruptcy protection in the U.S., and circa two hundred thousand oil patch jobs were lost. Many crafts could reinsert themselves into other industries (e.g., truckers, welders, electricians, administrators, etc.), because in the interim unemployment in the U.S. dropped below 4%. However, the many specialized professionals and technicians that definitely lost their jobs did not occupy fields or cut highways, as the standard practice in Argentina has seemed to be. Oil patch workers in the U.S. are seasoned on the cyclical nature of our business.

Dynamic Land License Situation

This may not be possible to replicate elsewhere. U.S. leases are small, and can cover parts of, the whole, or more than one drilling unit. Drilling units for oil (an average lease) start at 40 ac (16 ha) and for gas they can be as large as 640 ac (260 ha). Each lease has a primary term (2-5 y) for drilling a well, followed by a secondary term that starts once production is established, and lasts the entire productive life. If the lessee fails to drill during the primary term, the lease expires. The result is a Chinese Go game board effect, where players lay their “stones,” competing to build their strategic positions.

In an oil field, multiple payers large and small compete for leases in the *sweet spots*. They will rub elbows, often each with their own gathering and treatment infrastructure. Undrilled expiring or relinquished leases are automatically recycled and up for grabs, without the need for formal tenders. While perhaps economically inefficient from an operational standpoint (unless all interests are pooled via unitization), from the perspective of the passive actors collecting royalties and taxes, rent capture is maximized, because the development of the resource also is.

Vaca Muerta offers large tracts of exploitation leases for 35 years terms, with relatively modest commitments and no relinquishments required, because they are granted as exploitation licenses. Thus, an operator can focus on a sweet spot in a corner of a huge license and keep the rest for decades, unblemished.

As a result, Vaca Muerta with ~8.6 MM ac (~ 3,5 MM ha) of commercial oil and gas windows (of which under 5% are under exploitation), by mid-year 2019 had about 1,100 wells drilled and fracked to date, still mostly vertical, and produced under 275 Mboe/d (~ 45 Mm³pe/d).

Comparatively, Eagle Ford with ~3.5 MM ac (~1,4 MM ha) of commercial oil and gas windows, at seven years from its inception was producing 2.5 MMboe/d (400 Mm³pe/d), from about thirteen thousand fracked horizontal wells.

Historical Opportunism

There was also a good measure of luck. When the oil price dropped in 2014, the U.S. shale plays had been for the most part already de-risked, high oil prices concealing any missteps. Activity was already focused in the sweet-spots which, despite the abrupt price drop, continued to be above breakeven. Remarkably, while the rig count was slashed, U.S. shale oil production continued to rise by roughly one million barrels per day in 2015.

Political Risk and Capital Availability

Despite political party alternation in the U.S., energy self-sufficiency and free-market rules are not really under ideological debate. Local-level regulation is generally quite reasonable. This environment of confidence promotes easy access to debt and equity capital, not only for E&P operators, but also for suppliers, service providers and operators of treatment and transportation infrastructure. The market's response is almost immediate.

In contrast, during 2019 Argentina was mired in political and economic uncertainty over the October 2019 electoral outcome between two polarized country models. Country Risk in late June 2019 sat at almost 900 bps.

Operator Profile

The pioneers in recognizing the potential and originally developing U.S. shales were smaller and nimble independents with an entrepreneurial culture of positive attitude towards risk, innovation and experimentation (originally Mitchell, Range, Cabot, Chesapeake, XTO, Magnum Hunter, Oasis, EOG, Petrohawk, Anadarko, Oxy, Pioneer, Concho, Devon, Diamondback, among others). Majors have since been consolidating these shale plays and exploiting their economies of scale.

Besides the four large local firms, Argentina has attracted mostly the super-majors at the greenfield level. Because of their diversified portfolios and large scale, they can afford a long-term view of Argentina; they see the “signal” and are less concerned about the “noise” of Argentina's idiosyncratic political and economic volatilities. Besides, their capital commitments in Vaca Muerta, often in their earlier stages, are generally and relatively small in the grand scheme of shale, proof point that “we can do shale internationally.” They are often footnotes with respect to their corporate scales. Scaling-up to full development however, has to compete for Capex with their global projects, including their core non-conventional ventures in the U.S.

The independent operators that would also be desirable to attract, tend to focus exclusively on their U.S. shales. This is partly because their plates are full, and because their shareholders mandate such discipline. Pilots in Vaca Muerta would be material enough for them to be conspicuous, and they are much more sensitive to the surface risk “noise.” Moreover, a few of them had left Argentina and do not seem to share positive memories of their in-country experience, with regards to past monetary, fiscal, regulatory, asset ownership stability and transparency practices. That self-inflicted reputational damage to the country, often takes a long time to erase itself from affected corporate memories.

Conclusions:

It would seem a priori hard to replicate anywhere the U.S. “perfect investment ecosystem” that made its “Shale Revolution” possible, turning the U.S. into the world's top oil producer surpassing

Saudi Arabia and Russia. Some of its characteristics are structurally differentiating: the breadth and depth of its stable of nimble, creative and entrepreneurial operators, its physical, supply and service infrastructures, the abundance of a qualified work force under flexible labor laws, its reasonable regulation, and its unique land licensing system.

Above all, the perception of low political risk also drives the ability to attract debt and equity capital (particularly private equity) for all players in the non-conventional value chain. Vaca Muerta, despite its undoubtable technical appeal, is struggling to dissipate the ghosts that haunt Argentina from its not too distant past. It will not happen overnight, and its perennial economic volatility and political-institutional uncertainty, surely weren't helping.

There should be no time wasted in “silver bullet” complacency. What Argentina might consider doing:

- Send a bipartisan signal of institutional and sector policy stability, by toning-down the polarizing rhetoric, which is confusing and worrisome to foreign investors
- The land licensing system should not be modified to affect existing acquired rights (it would send a terrible signal, as the best course of action today is to signal contractual stability). However, it may be considered for point-forward, to tie acreage tenure closer to drilling activity. National and provincial fiscal incentives can be also offered to incumbents, allowing them to offer better terms to future joint venture partners farming-in to their acreage
- National and provincial governments may co-invest with Industry both in “hard” and “social fabric” infrastructures. For example, combined with funding from governmental or multilateral credit agencies and development banks, they could seed/coordinate foreign and local capital in the form of mezzanine financing for investment in transport and midstream infrastructure, or to offer accessible credit to domestic or inbound smaller operators and OFS companies.

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With over 40 years of industry experience, Carlos' international career evolved from hands-on field operations to reservoir engineering, planning, business development, and M&A.

Carlos joined the business in Amoco in 1978 (Argentina, Research and International), followed by Plains Resources (VP Engineering, VP M&A), Arthur D. Little (Senior Manager, Director), San Jorge International (President & COO) later merged to Chevron Latin America (Vice President of Business Development), G&G Energy Consultants (Founding Partner), The Scotia Group (Partner), Harrison Lovegrove (Managing Director and Partner) later merged to Standard Chartered Bank (Managing Director of Latin America O&G M&A), Tecpetrol (Country Manager USA and Director of Business Development), HSBC (Managing Director of O&G Advisory Americas), and Ecopetrol (Head – International New Ventures and Acquisitions).

He has developed particular expertise in NOC transformation, strategic and portfolio planning, business development (exploration new ventures and M&A), contractual and fiscal terms design, and in negotiations.

Carlos earned a professional degree in Chemical Engineering from the Universidad de Buenos Aires, a M.Sc. in Petroleum Engineering from the University of Tulsa (under SPE scholarship), and an MBA from Rice University (Jones Scholar). He sits in the School of Energy's Advisory Council at the University of Tulsa and in the Board of Directors of IAPG-Houston.