



## The PEMEX Game: AMLO vs. Investors

The first six months of Andrés Manuel López Obrador's (aka AMLO) presidency has proven to be no honeymoon between the Mexican leader and investors. Any post-election optimism has soured as concerns over AMLO's leftist political orientation and policy uncertainty have made investors wary and left second-guessing the government's economic agenda going forward.

These concerns have peaked regarding the government's handling of state-owned Petróleos Mexicanos (PEMEX). Carrying a substantial \$106 billion debt load, investors seek deep structural corporate reforms for PEMEX, including major changes in its give-take relationship with the government. While the government has taken steps to support PEMEX, its actions have been underwhelming from investors' perspective. The key question going forward is what to expect in terms of government support for the company - robust reform or more of the same?

The goal of this short research note is to examine strategic interactions based on hypothesized preferences for AMLO and his beliefs about Investors. By combining standard game theory and the Theory of Moves, developed by economist Steven Brams, we postulate two potential interactions.<sup>1</sup> These scenarios pit AMLO's desire to support PEMEX while avoiding fiscal distress for the government against Investors' desire for significant government action to aid PEMEX.

### GAME 1 – Distrust Game

The first interaction results in a "total conflict" or a "constant-sum" game, where there are no joint losses or gains, only total losses or gains. This game is labeled the "distrust game" as divergent preferences suppose that each player distrusts the other's motives (**Figure 1**). AMLO sees Investors antagonism regardless of his action.<sup>2</sup> He views Investors as inherently antithetical in their opposition to his policy objectives.

Figure 1. Distrust game

|      |               | Investors |             |
|------|---------------|-----------|-------------|
|      |               | Approval  | Disapproval |
| AMLO | Major package | (3,2)     | (1,4)       |
|      | Minor package | (4,1)     | (2,3)       |

Simple game payoffs (row, column)  
Final game outcome(s) circled

In this game, we assume that AMLO ultimately supports PEMEX but his first instinct is not to pursue major fiscal support jeopardizing his current national fiscal policy. Rather, he favors a minor support package combined with a continuing emphasis on anti-corruption and cleaning up PEMEX's corporate culture of waste and inefficiency.

Moreover, AMLO's perception of Investors, envisioning them as dissatisfied and unsupportive no matter his choice of action, further steers him away from a major support package. In game terms,

<sup>1</sup> For a complete discussion of the theory of moves (TOM), its rules, and application see Brams, Steven J. *Theory of Moves*. Cambridge: Cambridge University Press, 1994.

<sup>2</sup> In any game, we presume AMLO must necessarily move first as he must determine the nature and extent of any support package for PEMEX.

AMLO is unwilling to make a move that gives him his lowest outcome and simultaneously gives Investors their best outcome (1,4), otherwise called the sucker’s payoff.

Given the supposition that AMLO holds a distrustful view of Investors, even in the case where Investors initially approval of a major support package (3,2) he suspects they will ultimately disapprove so to achieve their best outcome by dismissing the support package and humiliating AMLO. Accordingly, the final expected outcome is the sub-optimal (2,3) with AMLO proposing a minor aid package that is reflectively panned by Investors.

**GAME 2 – Prisoner’s Dilemma**

An alternative game is conceivable but requires that AMLO views Investors in a friendlier light, allowing for joint gains making cooperation a possible outcome. This alternative game requires only a single change in how AMLO perceives the preferences of Investors. If AMLO views investors as focused solely on the specific nature of the PEMEX support package (major vs. minor) rather than inescapably hostile, the game’s outcomes transform.

**Figure 2. Prisoner’s Dilemma**

|      |               | Investors |             |
|------|---------------|-----------|-------------|
|      |               | Approval  | Disapproval |
| AMLO | Major package | (3,3)     | (1,4)       |
|      | Minor package | (4,1)     | (2,2)       |

Simple game payoffs (row, column)  
Final game outcome(s) circled

Game 2 is a classic prisoner’s dilemma (Figure 2). While still suggestive of distrust, it offers a window for cooperation. Also, this game has two potential outcomes. The outcome (2,2) is the classic suboptimal result of the prisoners’ dilemma of traditional game theory; however, under the dynamic interaction-based rules of the Theory of Moves, the players can achieve a mutually improved outcome of (3,3).

This enhanced outcome is obtainable under the standard assumptions that each player knows the other’s preferences and both are rational. The initial starting point is crucial, however. As in Game 1, AMLO necessarily moves first; nevertheless, it is possible that Investors could provide signals to AMLO highlighting potential cooperation. If AMLO goes with a minor support package, in an attempt to achieve his best outcome, Investors will predictably react with disapproval, resulting in the outcome (2,2).

Assuming AMLO knows of Investors’ revised preferences, it would be rational to accept his second-best outcome by offering a major package that meets with Investors’ approval (3,3). While Investors could disapprove, thereby earning their highest outcome, this is forestalled by the potential countermove by AMLO to reduce the support package moving the outcome to (2,2). Accordingly, moving from the initial state would be wasteful and counter-productive.

**Conclusion**

The results of these hypothetical games highlight the intractable nature of the interactions between the AMLO government and investors regarding PEMEX. While not a strict probability, it’s notable that two of the three potential outcomes lead to a sub-optimal result. A positive path is possible but requires shifts in perceptions, replacing antagonism with cooperation. Given the challenges to shift investors’ views, we expect continuing piecemeal reforms rather than bold action for PEMEX.

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