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TRIGGERS AND TARGETS

The Anatomy of Market Manipulation

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Introduction

During its July 7, 2011 open meeting to consider five final rule proposals under the Dodd-Frank Wall Street Reform and Consumer Protection Act,[2] the Commodity Futures Trading Commission (CFTC) adopted its Final Anti-Manipulation and Anti-Fraud Rules,[3] which remain largely unchanged from the rules it originally proposed on November 3, 2010.[4] During the proceeding, CFTC Commissioner Scott O'Malia referred to comments filed by my colleagues at *The Brattle Group*[5] that proposed the adoption of a clearer definition of loss-based market manipulation: *intentionally losing money on transactions that set prices to benefit the value of positions that tie to that price*. In questioning CFTC Director of Enforcement David Meister regarding *Brattle*'s comments, Commissioner O'Malia expressed concern that the rules being adopted were not clear as to the behavior prohibited, later asking "… we are not using [*Brattle*'s] definition in our rule … why not?"[6] Mr. Meister responded "… that definition is narrower than the authority that Congress gave to the Commission."[7]

If focusing only on the specific definition of loss-based market manipulation that was proposed in *Brattle*'s comments, then Mr. Meister's viewpoint is absolutely correct. The types of behavior that can cause a directional price movement to trigger a market manipulation extend beyond loss-seeking trading. For example, fraudulent statements can misrepresent the value of underlying assets to incent trading at artificial prices, and the price movement caused by the exercise of market power can also move prices to the benefit of targeted positions. However, in focusing only on the definition of manipulation proposed in *Brattle*'s comments, the CFTC ignored the economic framework that provided the analytical support for the definition. This framework for the analysis of market manipulation, as first articulated in a paper attached to the comments filed,[8] is of significant value to the CFTC, other agencies with anti-manipulation authority,[9] and energy regulators in the European Union under the REMIT Proposal.[10]

This framework provides for the consistent, uniform, and cooperative detection and analysis of manipulative behavior across cases, statutes, agencies, and governments. It is this certainty that traders in the market crave, as Commissioner O'Malia's concerns reflect.

Section 1 *The Analytical Framework of a Market Manipulation*

A market manipulation has three components:[11]

(1) ***Trigger:*** *An intentional act performed to produce a directional price movement*
(2) ***Target:*** *One or more positions that stand to benefit from the price movement*
(3) ***Nexus:*** *The causal linkage between the trigger and target*

There are numerous benefits to using this framework. Foremost, it allows for the identification of the market qualities that enhance the likelihood of the success of a manipulation, thus informing the development of screens for manipulative behavior and directing the path of future empirical research in the field. Separate analysis of the behavior that comprises the manipulation's trigger also allows for the specific identification of the acts that regulators see as potentiating a manipulation, providing much needed clarity to market participants such that compliance can be maximized.

Additionally, separation of the trigger from the target informs market surveillance and oversight efforts, such that market screens can focus upon trading designed to potentiate directional price movements, allowing for scarce regulatory resources to be optimized within and across agencies that have an anti-manipulation enforcement mandate. Finally, the framework is structured to satisfy the specific elements required to meet the burden of proof for demonstrating or disproving manipulation claims under statutes based either on a fraud standard or on the proof of an artificial price. Each of these benefits is described in more detail below.

Section 2 *Market Characteristics that Accentuate the Likelihood of Successful Manipulation*

As discussed in my original paper,[12] and mathematically proven in a subsequent paper with my colleague Dr. Paul Carpenter,[13] the likelihood of a successful manipulation increases as the cost of the manipulation trigger decreases, market supply and demand become more inelastic, and the amount of leverage held in the target increases relative to the size of the trigger. These three elements necessarily coincide with the three components of a manipulation as couched in a cost/benefit analysis. Specifically, the manipulator evaluates the cost of the manipulation trigger relative to the leveraged benefit it receives to the targeted positions, with the nexus strengthened as demand and/or supply becomes less elastic. Hence, the logic of the framework we propose is a fundamental and widely accepted approach that underlies all basic economic decision making.

This simplicity does not impinge the value of the framework for informing regulators, market participants, lawmakers, and academicians as to the direction of market design, surveillance, and enforcement. Because cheap triggers better enable manipulations, improvements in the certainty of detection and increases in the penalties for proven non-compliance will decrease the number of manipulations attempted. In addition, since the inelasticity of supply and demand increase the ability of a manipulator to exploit a nexus between triggers and targets, the articulation of certainty with respect to the types of behavior that are deemed to be manipulative will increase the liquidity of trading where possible and inform regulators as to the markets that are most in need of continual oversight and surveillance. Because the accumulation of large price-taking

positions provides an incentive for manipulation, continued oversight of firms with large physical holdings, as well as greater transparency and regulation concerning financial positions, will reduce the ability of those with manipulative intent to accumulate such positions in stealth or in boldness. Such is the purpose of Dodd-Frank, the REMIT Proposal, and other legislation designed to bolster and unify the anti-manipulation rules across cases, agencies, statutes, and nations.[14] Future cooperation and unity in analytical approach is essential, and the framework we propose could assist such efforts.

Section 3 *Types of Behavior that can Trigger a Manipulation*

Any actions that intentionally cause an anomalous directional movement in one or more market prices could theoretically potentiate a market manipulation. However, there are three categories of behavior that are of clear interest:

(1) ***Uneconomic Trading:*** *Bids significantly above or offers significantly below market*
(2) ***Outright Fraud:*** *Intentional statements or acts to misrepresent the value of an asset*
(3) ***Market Power:*** *Price movements caused by exertion of monopoly or monopsony power*

Our original paper focused on uneconomic trading as the manipulation trigger, perhaps so much so that the CFTC perceived that our intent was to categorize all manipulations as the product of this type of trigger. As evidenced by the Federal Energy Regulatory Commission's (FERC) enforcement actions against Amaranth Advisors[15] and Energy Transfer Partners,[16] as well as the CFTC's proceedings against trader Anthony DiPlacido[17] and recently filed action against Parnon Energy, et al.,[18] it is highly evident that uneconomic trading is a category of behavior that can trigger a manipulation.

The common thread among these cases confirms that this type of trigger is especially problematic in energy markets, wherein the likelihood of a successful manipulation is enhanced by frequent episodes of inelastic demand and supply, heavy reliance on price indices as the price-making mechanism, and the use of price-making transactions by market participants that simultaneously hold large physical and financial price-taking positions.[19] Because the execution of trades at a loss requires no market power in any traditional sense, loss-based manipulations can be executed by any entity that holds sufficient financial or physical leverage such that the losses it intentionally takes on its price-setting trades are more than offset by the resulting gains made in its targeted positions.[20] Interestingly, the framework is equally applicable irrespective of the timing of the loss relative to the gain, whether incurred before (such as with a pool hustle, where bets are lost initially to induce a large wager for a greater subsequent gain), during (such as with derivatives tied to an index), or after (as occurs following a corner and squeeze).[21]

Not surprisingly, the same characteristics that increase the likelihood of a successful manipulation using uneconomic trading will also assist the ability to use other types of triggers. Outright fraud can be used to trigger a directional change in market prices to misrepresent the price (or some other key aspect central to the trade) of the underlying asset, such that other market participants unwittingly execute trades that increase the value of the manipulator's targeted positions. In fact, the only difference between the use of outright fraud as a trigger, as compared to the execution of uneconomic trades, is who bears the associated loss on these transactions. From this perspective, few triggers could be "cheaper" to the manipulator than

losses suffered by someone else, thus underscoring the point that the certainty and strictness of punishment are critical to the deterrence of all behavior that is intended to trigger a manipulative scheme.

Finally, market power can be used to trigger a manipulation. In my original paper, I stressed that market power is unnecessary to the execution of a market manipulation. This remains true, as the examples of uneconomic and fraudulent trading attest.[22] However, this observation does not preclude the fact that market power can directionally move a price at the will of its holder. Should that holder also own targeted price-taking positions that tie to the price over which it has influence (such as derivatives, forwards, or other positions with the requisite nexus), the holder can exercise market power as a trigger to potentiate a manipulation.

On first blush, this seems to cloud the distinction between manipulation and antitrust law, as the manipulation's trigger and target both benefit from the directional price movement. However, the framework provides guidance to differentiate the two. The "cheapest" trigger of all is one that pays its instigator, an act better viewed on a stand-alone basis as an antitrust concern. If that same actor holds positions in markets tied to the affected price, the targeted cross-market effect potentiates a manipulation. Market power can also exacerbate the nexus between these markets by reducing the elasticity of market supply and demand. This can be exploited by the manipulator irrespective of the type of trigger used for the manipulation. Thus, while market power is not *necessary* for the execution of a market manipulation, holding market power can *assist* a manipulation by maximizing the price effect that provides the nexus between the manipulation's trigger and target.

Section 4 *Coordination of Market Surveillance and Oversight Efforts*

Separation of the transactions that execute a manipulation's trigger versus those that comprise its target also focuses market surveillance and oversight efforts such that scarce regulatory resources can be used efficiently. From a pragmatic perspective, the number, size, scale, and scope of price-taking positions held by traders is unknowable absent the investment of substantial search costs. For example, a global energy provider may simultaneously hold physical positions in natural gas, electricity, oil, and LNG on multiple continents, hedged against each other and with financial derivatives traded on multiple exchanges around the world, interlaced with countless speculative plays held by multiple subsidiaries and legged across markets, currencies, and time. Dodd-Frank and the REMIT Proposal will provide a glimpse into some of the positions that may serve as the target of manipulation attempts, but cannot possibly track and interconnect them all continuously. The cross-agency cooperation required to continually match manipulative triggers against targeted positions likewise may not be present.[23]

By comparison, continual monitoring of the trades that could trigger a manipulation is a far more achievable goal. Because the enforcement agencies already possess regulatory authority over the transactions that set prices within their jurisdictional markets, they have the ability to continually analyze the data associated with those transactions for evidence of manipulative triggers — the use of market power or the placement of uneconomic transactions. Ideally, this process would rely on automated screens designed to detect for indicia of manipulative behavior, with human input required when suspicious activity is detected and for calibrating the screens as needed over time.[24] Every screen will generate false positives and/or false negatives, however, and natural variances in the market will necessitate the development of multiple screens and intuitive

interpretations to distinguish legitimate trading from suspect behavior. The detection of outright fraud is also well suited to these agencies, for market participants are likely to raise concerns of their competitors' inappropriate behavior to regulators as a matter of practice.[25]

If the analysis of the trigger provides evidence of a manipulated price sufficient to warrant the opening of an investigation or the initiation of a private lawsuit,[26] the instigator must ascertain the totality of the suspected manipulator's positions that tie to that price. Data availability across agencies is imperative to this function, making preliminary investigations possible without the need to subpoena records from the suspect or even to alert it that it is under investigation. If a formal investigation commences, these data can be used to audit the responses of the suspect and to identify holes in records kept across the various agencies, as will occur with the evolution of physical and financial market and instruments over time. If it is proven that the suspect used the trigger to benefit its net targeted positions, and a nexus between the two likewise is shown, then the trier of fact must determine whether the behavior demonstrates sufficient intent to find that a manipulation occurred. Thus, while the fact issue of intent should vary from one case to the next, proof of the mechanical characteristics that define a manipulation should not.

A systemic approach to analyzing the interactions between manipulation triggers and targets will ultimately allow for the optimization of scarce regulatory resources within and across agencies that have an anti-manipulation enforcement mandate. Cooperation across agencies is essential to this process, such that a uniform and systemic approach to compliance and enforcement emerges to the benefit of the agencies and the traders they regulate. As new financial instruments develop and new linkages across products emerge, a loop of continual learning should develop and help the agencies keep pace with the evolution of the industries they regulate. This will ultimately allow for better understanding of the pricing nexuses that simultaneously provide liquidity to the market and potentiate manipulative behavior.

Section 5 *Satisfaction of the Burden of Proof for Proving or Disproving Manipulation*

The proposed framework is structured to satisfy the specific elements required to meet the burden of proof for manipulation claims brought under either a fraud-based statute or statutes based on artificial price.[27] Under a fraud statute, proof requires showing that (1) a jurisdictional transaction (2) was used to execute a fraudulent device, scheme, or artifice (3) with the requisite intent. Analysis of the manipulation's trigger demonstrates that jurisdictional transactions were used intentionally in an attempt to move a price through uneconomic trades, outright fraud, or the exertion of market power. Analysis of the manipulation's target provides evidence that the manipulator intended to assemble a manipulative device, scheme, or artifice and had the ability to make it work. Finally, demonstration of a nexus between the trigger and target proves the linkage mechanically needed to perpetrate the manipulation. Fraud-based statutes do not require proof that the manipulation was successful, making them preferable to regulators seeking to enforce compliance through the levying of civil penalties. However, proof of an effect is necessary for disgorgement of profits in regulatory actions or for the proof of damages in private lawsuits.

The framework also directly satisfies the burden of proof under artificial price statutes. For example, proof under the CFTC's statute requires showing that the manipulator had (1) the ability and (2) intent (3) to create an artificial price and (4) caused that price to occur. Analysis of the trigger demonstrates intent

through the showing of uneconomic trades, outright fraud, or the exertion of market power. Analysis of the manipulation's target demonstrates that the actor intended to assemble a manipulative scheme and had the ability to make it work. Proof of the nexus demonstrates the linkage needed to show causation. All that remains is to demonstrate a measurable price effect, which is equivalent to the requirement needed to prove disgorgement or damages under a fraud-based statute. The framework's ability to unify the analysis of market manipulation across statutes therefore serves as a further vehicle for enforcement agencies to align their methodologies such that a common approach to the analysis of market manipulation results. This would extend to the EU's energy markets under the REMIT Proposal that includes both fraud-based and artificial price prohibitions in its regulation.

Conclusion

Clarity Provided to the Definition of Manipulative Behavior

The historical precedent set by manipulation cases tried before the Securities and Exchange Commission (SEC), FERC, and CFTC is an inconsistent set of categorical determinations of specific behaviors as illegal, with no functional linkage to common economic contexts across the cases tried by each agency, much less across the agencies. This "I know it when I see it" approach provides little clear guidance to traders as to the types of behavior that each Commission perceives as manipulative, leading them to either (1) avoid legitimate trades to prevent suspicion under uncertain and shifting enforcement standards or (2) pay no attention to the standard, given knowledge of the agencies' historical difficulty in bringing successful cases. CFTC Commissioners O'Malia's and Chilton's remarks reflect these extremes, with Commissioner O'Malia's concerns focused on chilling legitimate trading and Commissioner Chilton's upon the historical inability of the Commission to prosecute cases under its old artificial price standard.[28] The framework we propose simultaneously provides behavioral certainty to market participants and prosecutorial efficiency to enforcement agencies, leaving the question of manipulative intent as the key issue of fact.

The framework would also assist the measurement of harm from the manipulation by separating damages incurred in the trigger, target, and other markets collaterally affected. Harm from the trigger accrues to those duped into trading at a loss based on the misinformation injected by the manipulator.[29] Harm in the targeted positions accrues to the counterparties of the manipulator's price-taking positions. Finally, to the extent the effects of the manipulation may spill into other markets or disrupt asset values over time, other parties may be damaged. While the theoretical potential for liability may therefore seem huge, the provable amount may in fact be quite small due to difficulty in establishing a nexus to the manipulated markets. Our focus in prior works on uneconomic trading as a source for creating such harm is important, as this type of manipulation is understudied, previously unexplained, and of great concern because of its lack of transparency. However, as Mr. Meister's comments correctly assert, other types of behavior can trigger a manipulation and its associated harms, including outright fraud and the exercise of market power. The framework we propose is equally applicable under all such circumstances.

Endnotes

[1] I would like to thank my colleagues at *The Brattle Group* who have assisted the development of this paper and the papers that preceded it: Dan Arthur, Pinar Bagci, Romkaew Broehm, Paul Carpenter, Dan Harris, Peter Fox-Penner, Hannes Pfeifenberger, Jim Reitzes, Petru S. Stoianovici, Gary Taylor, and Bin Zhou. Special thanks also to Dr. Timothy J. Brennan, University of Maryland, Baltimore County, Department of Public Policy; Dr. Michael A. Goldstein, Donald P. Babson Endowed Chair in Applied Investments, Babson College; Dr. Andrew Kleit, MICASU Faculty Fellow in Energy, Environmental and Mineral Economics, The Pennsylvania State University; Dr. Donald Murry of C.H. Guernsey & Company; and Matthew L. Hunter, Senior Adviser, Division of Energy Market Oversight, Office of Enforcement, Federal Energy Regulatory Commission.

[2] The webcast of this meeting, *Open Meeting on Five Final Rule Proposals under the Dodd-Frank Act,* Kuly 7, 2011, is available at: http://www.capitolconnection.net/capcon/cftc/webcastarchive.htm#.

[3] See 17 CFR Part 180, *Prohibition on the Employment, or Attempted Employment, of Manipulative and Deceptive Devices and Prohibition on Price Manipulation* (released July 7, 2011). Available at: http://www.gpo.gov/fdsys/pkg/FR-2011-07-14/pdf/2011-17549.pdf.

[4] See 17 CFR Part 180, *Prohibition of Market Manipulation*, 75 FR 67657 (November 3, 2010). Available at: http://www.cftc.gov/ucm/groups/public/@lrfederalregister/documents/file/2010-27541a.pdf.

[5] See *Comments of Dr. Daniel Arthur, Dr. Romkaew P. Broehm, and Mr. Gary Taylor to the Commodity Futures Trading Commission Regarding the Notice of Proposed Rulemaking on the Prohibition of Market Manipulation, 17 CFR Part 180*, January 3, 2011. Available at: http://www.brattle.com/_documents/UploadLibrary/Upload905.pdf.

[6] See *Open Meeting* at timestamp 58:37.

[7] See *Open Meeting* at timestamp 59:05.

[8] *Id*. at page 24, Ledgerwood, *Screens for the Detection of Manipulative Intent*, December 19, 2010. Available at: http://ssrn.com/abstract=1728473.

[9] The Securities and Exchange Commission (SEC), the Federal Energy Regulatory Commission (FERC), and the Federal Trade Commission (FTC).

[10] *Proposal for a Regulation of the European Parliament and of the Council on energy market integrity and transparency* (REMIT Proposal), Brussels, 8.12.2010, COM(2010) 726 final 2010/0363 (COD).

[11] See *Detection*, page 9 *et seq*.

[12] See *Detection*.

[13] See *id.*, pages 13 to 18; Ledgerwood and Carpenter, *A Framework for Analyzing Market Manipulation*, April 16, 2011. Available at: http://ssrn.com/abstract=1811764.

[14] All U.S. agencies with anti-manipulation authority now have a "fraud-based" statute based upon the SEC's Rule 10b-5. See 17 C.F.R. § 240.10b-5, arising under the authority granted in 15 U.S.C. § 78j(b) (2010) [SEC]; 18 C.F.R. § 1c (2005) [FERC]; 16 C.F.R. Part 317, arising under the authority granted in 42 U.S.C. 17301-17305 as amended by Section 811 of Subtitle B of Title VIII of The Energy Independence and Security Act of 2007 (2009) [FTC]; 7 U.S.C. § 6(a)(1) (2010) [CFTC]. The CFTC has also retained its original anti-manipulation statute based upon a finding of artificial price, now codified by Dodd-Frank as 7 U.S.C. § 6(a)(3) (2010). The EU's *REMIT Proposal* also includes language for both a fraud-based and an artificial price standard. See *REMIT Proposal*, pages 11 to 12.

[15] See *Order to Show Cause and Notice of Proposed Penalties*, Docket No. IN07-26-000, 120 FERC ¶ 61,085 (July 26, 2007); *Initial Decision*, Docket No. IN07-26-004, 130 FERC ¶ 63,004 (January 22, 2010); *Order Affirming Initial Decision and Ordering Payment of Civil Penalty*, Docket No. IN07-26-004, 135 FERC ¶ 61,054 (April 21, 2011).

[16] *Order to Show Cause and Notice of Proposed Penalties*, Docket No. IN06-3-002, 120 FERC ¶ 61,086 (July 26, 2007).

[17] *DiPlacido v. CFTC*, 2009 U.S. App. LEXIS 22692 (2d Cir 2009).

[18] See *Commodity Futures Trading Commission v. Parnon Energy, Inc., Arcadia Petroleum LTD., Arcadia Energy (Suisse) SA, Nicholas J. Wildgoose and James T. Dyer* (S.D. N.Y. 2011).

[19] See *Detection*, page 18 and *Framework*, pages 24 to 27.

[20] *Id.* See also Ledgerwood, Taylor, Broehm, and Arthur, *Losing Money to Increase Profits: A Proposed Framework for Defining Market Manipulation*, The Brattle Group Inc., March 2011. Available at: http://www.brattle.com/_documents/UploadLibrary/Upload919.pdf.

[21] See *Losing Money*, pages 4 to 5.

[22] Sellers can offer goods for sale at prices so low that they face no competition whatsoever, as is also true of buyers purchasing goods at prices significantly above market. If such trades set prices, the manipulator can take advantage of the inelasticity of supply and demand to execute trades at a loss to cause directional price movements and trigger a manipulation, without possessing any market power whatsoever. The use of fraud eliminates any need of presence in the price-making market for the manipulator, as it then is relying on the actions of other market participants to produce the directional price movement sought.

[23] For example, the CFTC disputed the FERC's jurisdiction in Amaranth. See *Amaranth Advisors, L.L.C. and Commodity Futures Trading Commission v. Federal Energy Regulatory Commission: Amicus Brief of Futures Industry Association, Managed Funds Association, CME Group, Inc. and National Futures Association in Support of Petitioners and Intervenor*, No. 07-1491 (D.C. Cir. October 15, 2008). The FERC did not rule on its ALJ's decision until after this appeal was deemed to be unripe. See *Brian Hunter v. FERC*, No. 10-1017, slip op. at 2 (D.C. Cir. Dec. 22, 2010). More recently, the CFTC has suggested that some historically FERC jurisdictional instruments (such as financial transmission rights) may require public interest exemptions to avoid CFTC jurisdiction. See *Further Definition of "Swap," "Security-Based Swap," and "Security-Based Swap Agreement"; Mixed Swaps; Security-Based Swap Agreement Recordkeeping*, 76 FR 29818, 29839 (May 23, 2011).

[24] See *Detection*, page 41 *et seq*.

[25] For example, the FERC has established an "Enforcement Hotline" designed to provide market participants with an outlet for reporting fraudulent behavior on an anonymous basis. For further information, see *FERC Enforcement Hotline* website. Available at: http://www.ferc.gov/enforcement/staff-guid/enforce-hot.asp#skipnav.

[26] The statutes of the CFTC, SEC and FTC allow private causes of action, whereas the FERC's Rule 1c specifically excludes private lawsuits.

[27] For further discussion, see *Losing Money*, pages 3 to 4.

[28] Commissioner O'Malia's statements were discussed above in the context of the July 7, 2011 Commission meeting adopting the CFTC's Final Manipulation Rules. Commissioner Chilton's comments were made on March 23, 2010, to the Metals Market Investors group in Washington, DC, wherein he noted that "… in 35 years, there has been only one successful prosecution for manipulation …" by the CFTC under its artificial price standard (the 2009 DiPlacido case).

[29] Uneconomic trades misrepresent value and may induce other market participants on the same side as the triggering transactions to buy/sell at a loss, whereas outright fraud induces the entirety of the loss to be taken by other traders. The damages caused by an abuse of market power are an antitrust injury.

About the Author

Shaun Ledgerwood is a senior consultant at *The Brattle Group*. He specializes in issues of market competitiveness with an emphasis on the economic analysis of market manipulation in commodities markets. Prior to joining *Brattle*, he served as an economist and attorney for the Federal Energy Regulatory Commission (FERC) in its enforcement proceedings involving Energy Transfer Partners, L.P. and Amaranth Advisors, LLC. He has built upon these and other analyses of manipulative behavior in the wholesale electricity and natural gas markets to develop a paradigm for detecting manipulative intent. During his tenure with the FERC, Dr. Ledgerwood also led the agency's pilot project for energy market surveillance, as well as evaluations of the impact that proposed environmental and financial reform legislation would have on the Commission's jurisdiction and resources.

Dr. Ledgerwood has worked as a professor, economic consultant, attorney, and senior market advisor to the regulated industries for over twenty years. He previously worked for ten years as a consultant for C.H. Guernsey and Company in Oklahoma City. His practice specialized in the analysis of market power in energy and other regulated and non-regulated markets; issues pertinent to economic regulation, ratemaking, power supply, resource planning, and electric asset valuations; and the computation of damages pursuant to actions in tort or contract. He has testified as an expert witness before state utility commissions and in federal court.

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