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Cash-or-Nothing Warrants - A Case of Binary Payoffs in Structured Products

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ABSTRACT

Recent years have witnessed a substantial increase in both the size and scope of the retail market of structured financial products known as certificates. This growth has attracted the attention of the entire financial industry, academicians and regulators. Most certificates are created by intermediaries through various combinations of fixed income securities, equity securities, and/or derivative securities and typically marketed to investors under a proprietary brand name created by the intermediary (issuer). Regulators have concerns about the sophistication of certificates (Ricks, 1988; Lyon, 2005; NASD, 2005; Simmons, 2006; Isakov, 2007), especially when issuers begin targeting less-sophisticated individual investors as primary customers (Laise, 2006; Maxey, 2006).

In this paper, we study a new financial product known as "*Cash-or-Nothing Warrants*". Cash-or-Nothing Warrants (also known by the commercial name of "*Touchdown Warrants"*) are one of the equity-linked "structured products" issued by major banks Europe (OTC- over the counter), whose value has a binary relationship to an underlying asset. The rate of return on the investment in the warrant is contingent upon the performance of a *pre-specified equity index* over a *pre-specified period* (known as *term to maturity*). If the price of the underlying asset closes at maturity *above* (*below*) the exercise price, the investors of the call warrants will receive a fixed amount of money (the warrant expires worthless). Opposite payoffs will result in the case of put warrants.

In this market, Touchdown Warrants issuers may be able to extract economic rents as a lack of transparency (market complexity) combined with investors' limited financial literacy means that it is difficult to assess the "fairness" of issue prices. Furthermore, investors cannot arbitrage pricing discrepancies due to limitations as the inability to short sale or the inability to identify available substitute products (i.e. it is challenging for retail investors due to a large variety of product names and product features). The previous challenges and concerns justify the continuous study of brand new products with exotic features and high risks. An amplifying factor in this matter is the constant desire for skewed results or "long shots" (pure speculation) by investors, specially unsophisticated. Previous literature on certificates with knock-out options find that small moneyness at issuance reflects the high leverage preferences and the speculative investment motivation of investors (Entrop et al., 2013).

We introduce and describe a new financial product referred to as Touchdown Warrants and show, based on option pricing theory, that the payoff of a Touchdown Warrant can be duplicated with binary options. We also empirically examine Touchdown Warrants issued by Bank Vontobel AG between August 2005 and January 2008 to investigate if the issuer made a profit in the primary market. Consistent with previous research on structured products, the issuer generates a profit in the primary market. Finally, we simulate the sensitivities of Touchdown Warrants to changes in different pricing input variables and parameters used in the design of Touchdown Warrants.