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Sommario/riassunto	We are defining and studying an algebra-geometric analogue of Donaldson invariants by using moduli spaces of semistable sheaves with arbitrary ranks on a polarized projective surface. We are interested in relations among the invariants, which are natural generalizations of the "wall-crossing formula" and the "Witten conjecture" for classical Donaldson invariants. Our goal is to obtain a weaker version of these relations, by systematically using the intrinsic smoothness of moduli spaces. According to the recent excellent work of L. Goettsche, H. Nakajima and K. Yoshioka, the wall-crossing formula for Donaldson invariants of projective surfaces can be deduced from such a weaker result in the rank two case!