knowledge and invention.[193] The economists used statistical models which can be summarized by the forthcoming results.

As a preliminary issue, the researchers found that the likelihood that an invention is successfully licensed is enhanced by the presence and scope of patents related to the invention.[194] This finding refutes the anticommons concern of Bayh-Dole critics.[195]

With respect to other related issues of commercialization, the economists' findings were not so clear. For example, the researchers could not confirm their hypothesis that "academic inventions from collaborative research with industry partners are more likely to be licensed than other inventions" and reject the hypothesis that "spin-off licensees significantly differ from external licensees in their likelihood to commercialize inventions or in the level of royalties."[196] Thus, even though data shows Bayh-Dole has led to an increase in collaborative work and creation of startups, the evidence questions the effects of this on technology transfer.[197]

Despite the potential shortfalls noted in the Max Planck study, statistics show that commercialization has been widespread since Bayh-Dole. University research created 1.32 products, on average, per day, from fiscal year 2006.[198] This success is unique to the United States and vastly greater than the amount prior to Bayh-Dole. Even more notably, there were nearly 5,000 existing university licenses in 2006, which shows clear evidence of the university-industry partnership that Bayh-Dole has fostered.[199] Numerous universities point to Bayh-Dole as the driving factor behind the development and commercialization of life-saving drugs.[200] Despite critiques from opponents of the Act, the BDA's effects on commercialization are clear and positive.

3. Bayh-Dole's Effect on Research and Scientific Progress

As previously noted, critics argue that a weakness of the BDA is that it shifts the focus from basic to applied research, and that it creates conflicts of interests in

193 *See* Guido Buenstorf and Matthias Geissler, *Not invented here: Technology licensing, knowledge transfer and innovation based on public* research, Papers on Economics and Evolution, Max-Planck-Gesellschaft (December, 2009).
194 This is true for both domestic and foreign licensees. *See id.* at section 6.1.
195 While Bayh-Dole does promote patenting, patented inventions are more likely to be licensed, which inevitably results in commercial use and future development. *See id.*
196 *Id.* at section 6.2 (hypothesis 2a and 5).
197 For statistics regarding startups, see footnote 77, *supra.*
198 *See* Bremer et al., *supra* note 175, at 9.
199 *See id.*
200 *See* Emory Press Release, *supra* note 3 ; *see* Bremer et al., *supra* note 175 , at 9.

researchers who may be more likely to withhold their research for fear that a university will gain patent rights.[201]

McManis and Noh attempt to determine whether or not Bayh-Dole has generated any inefficiencies on its own that lead the university research and development world to be less productive than it would absent the scheme. With regards to dissemination of research, they found that though there is "some evidence suggesting increasing secrecy and delays in the dissemination of genetic research, it is not at all clear that the concomitant increase in university patenting and licensing necessarily bears any causal relation."[202] With respect to diversion of research, the authors cite a Thursby and Thursby study finding that there have been some changes in the direction of faculty research, but "much of the available evidence suggests that faculty have not been diverted from their traditional role in the creation of knowledge."[203] Other academics similarly note that there is no evidence that research "has become any less fundamental" after Bayh-Dole.[204] The evidence and lack of contrary evidence all point to the conclusion that Bayh-Dole is no more inefficient with respect to promoting academic research than the pre Bayh-Dole scheme.

The next chapters look into the future of Bayh-Dole. Chapter V examines the recent *Stanford* case, which may exacerbate some related concerns with respect to the force, interpretation, and application of the BDA. Chapter VI will assess the evidence presented and determine how Bayh-Dole provisions can be effective overseas, despite noted differences in university technology transfer systems.

201 *See* Chapter III, *supra.*
202 McManis and Noh, *supra* note 188, at 26.
203 *Id.* at 27, *citing* Jerry G. Thursby and Marie C. Thursby, University Licensing Under Bayh-Dole: What are the Issues and Evidence?" (May 2003.).
204 Richard R. Nelson, *Observations on the Post-Bayh-Dole Rise of Patenting at American Universities*, 26 J. Tech. Transfer 13, 14 (2001).